

# AMSARA

ANNUAL REPORT 2004

Accession Medical Standards  
Research Activity Analysis &



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# **AMSARA**

## **Accession Medical Standards Analysis and Research Activity**

### **2004 Annual Report**

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## Executive Summary

The Accession Medical Standards Analysis and Research Activity (AMSARA) completed review, prior to final staffing, of DoD Instruction 6130.4 ("Medical Standards for Appointment, Enlistment, or Induction in the Armed Forces") developed by the Accession Medical Standards Working Group during 2004. **This instruction was published by the Under Secretary of Defense for Personnel and Readiness on January 18, 2005, and is the first one to be based entirely on the available evidence in terms of prevalence, morbidity, and attrition.** Psychiatric conditions have been changed to be consistent with the *Diagnostic and Statistical Manual of Mental Disorders*, 4<sup>th</sup> edition, classification. In addition, it specifies by medical condition whether current or past disease is disqualifying. It also updates the instruction to include current International Classification of Disease, 9<sup>th</sup> revision, condition naming and coding.

A review of all Initial Entry Training (IET) discharges (2,889 records in sample) at Fort Leonard Wood in FY03 was completed in 2004. Included in the review were counseling records and outpatient clinic visits and diagnoses. The study found evidence of multiple causes for discharge (such as administrative and medical problems) in both entry level separations and other medical and physical separations. **The conclusion was that relying on the frequency of existed prior to service (EPTS) discharges to estimate the burden of disease in trainees may well lead to an underestimation of disease prevalence.**

A study of the trend in military applicants for active duty by service and component from 2000 to 2004 was completed. **The number of applicants was fewest in 2004 for eight of ten service/component combinations.** Larger reductions were seen in female and younger (aged 17–20 years) applicants. A similar study was performed of the trend in military hospitalizations by service and component. **An early upward trend in hospitalizations, in particular injury related, was observed in Army and Marine Corps personnel.** The findings of both these studies were expected based on military deployment in conflict zones and may influence future medical accession standards and waivers.

Medical waiver applications were reviewed in detail this year to include attention deficit and hyperactivity disorder, asthma, hearing loss, and myopia. A case series of approved and disapproved waiver applications was reviewed from the U.S. Navy Bureau of Medicine waiver database to describe general characteristics of the medical conditions considered in terms of the severity, duration, and treatment. Myopia was examined in detail this year. **Survival analysis demonstrated that retention was not significantly different between those waived for myopia ( $n = 1,589$ ) compared with fully qualified recruits entering without a waiver.** An EPTS discharge review of 143 myopia cases was performed.

In 2004, AMSARA completed phase I (feasibility trial) and phase II (pilot study of Army applicants) of the **Assessment of Recruit Motivation and Strength (ARMS) study** (funded by U.S. Army Accession Command and U.S. MEPCOM). The study consists of **a physical performance test of Army applicants and shippers** at six MEPS. It is designed to predict morbidity and attrition during IET through the use of objective testing (push-ups and a submaximal step-test). Phase III, currently in progress, allows for automatic waiver determinations of Army applicants who are over allowable body fat percentage and pass the test. The morbidity and attrition patterns of these study participants will be followed during IET.

AMSARA is committed to further development of evidence-based medical accession standards to enable the DoD to enlist the highest quality applicants in more cost-effective manner, thereby ensuring a healthy, fit, and effective force.

## Introduction

The Medical-Personnel Executive Steering Committee (formerly the Accession Medical Standards Steering Committee) was established by the Undersecretary of Defense (Personnel and Readiness) to integrate the medical and personnel communities so they could provide policy guidance and establish standards for accession requirements. These standards would stem from evidence-based information provided by analysis and research. Chaired by the Principal Deputy Undersecretary of Defense (Personnel and Readiness), the committee includes the assistant secretaries (manpower) of the military departments, the uniformed personnel chiefs and surgeons general of the services, the Assistant Secretary of Defense (Health Affairs), the Assistant Secretary of Defense (Reserve Affairs), the Deputy Undersecretary of Defense (Military Personnel Policy), and the Coast Guard.

The Accession Medical Standards Working Group is a subordinate working group that reviews accession medical policy issues contained in DoD Instruction 6130.4 entitled “Medical Standards for Appointment, Enlistment, or Induction in the Armed Forces.” This group is comprised of representatives from each of the offices listed above.

AMSARA was established in 1996 within the Division of Preventive Medicine at Walter Reed Army Institute of Research to support the efforts of the Accession Medical Standards Working Group. The mission of AMSARA is to support the development of evidence-based accession standards by guiding the improvement of medical and administrative databases, conducting epidemiologic analyses, and integrating relevant operational, clinical, and economic considerations into policy recommendations. AMSARA has the following six main objectives:

1. Validate current and proposed standards (e.g., should asthma as a child be disqualifying?);
2. Validate assessment techniques (e.g., improve current screening tools);
3. Perform quality assurance (e.g., monitor geographic variation);
4. Optimize assessment techniques (e.g., develop attrition prediction model);
5. Track impact of policies, procedures, and waivers;
6. Recommend changes to enhance readiness, protect health, and save money.

Military staffing to support this effort includes the Deputy Director, Division of Preventive Medicine, COL Margot R. Krauss, and the Chief, AMSARA, LTC David W. Niebuhr, and CPT Amy Millikan.

AMSARA is augmented with contract support through Allied Technology Group. Current staff includes Project Manager, James Onaitis; Senior Biostatistician, Dr. Yuanzhang Li; Senior Analyst, Timothy Powers; Statistician, Weiwei Han; Analysts, Vibha Vij; Data Manager, Janice Gary; Editor, Therese Grundl.



# 1. STUDIES

## **Attention Deficit and Hyperactivity Disorder Waiver Cases in Marine Corps and Navy Recruits: An Evaluation of Waived and Denied Records from 2003 to 2004**

According to the *Diagnostic and Statistical Manual of Mental Disorders* (4<sup>th</sup> edition), criteria for the diagnosis of attention deficit and hyperactivity disorder (ADHD) are the existence of symptoms of inattention, hyperactivity, or impulsivity that persist for at least 6 months to a degree that is detrimental to development in academic, social, or occupational functioning. In addition, some symptoms must be present before age 7 years and in two or more settings.

DoD Instruction 6130.4, "Medical Standards for Appointment, Enlistment, or Induction in the Armed Forces," underwent a change in 2004 regarding the diagnosis of ADHD. The 2003 standards for ADHD indicate disqualification of applicants who demonstrate chronic history of academic skills deficit secondary to organic or functional mental disorders that interfere with work or school after age 12 or current use of medication to improve or maintain academic skills. The 2004 standards were modified to state that an applicant is qualified as long as he or she demonstrates passing academic performance and no use of medication in the previous 12 months.

In this record review, the BUMED raw data files of recent applicants for accession medical waiver were scanned for ADHD [diagnostic condition via the ICD9 code for this disorder (code 314)] excluding applicants with more than one diagnosis. Applicants fitting these criteria were then sorted by month and year to include only those applicants with inprocessing dates falling between June–August 2003 and June–August 2004 (the months when the new standard was instituted). The indate, which is the first day of the in-processing and examination period, was chosen to include all the applicants whose in-processing began after June. This review produced several duplicate records that were excluded from further study. Table 1.1 describes results after the duplicate records were excluded.

**TABLE 1.1. ADHD RECORDS**

Year	Approved	Disapproved	Resubmitted	Total
2003	44	9	10	63
2004	30	13	5	48
Total 2003 + 2004	74	22	15	111

Table 1.2 describes the average age of applicants overall and for each subgroup according to year of application.

**TABLE 1.2. MEAN AGE (IN YEARS) OF APPLICANTS**

Year	Approved	Disapproved	Resubmitted	Total
2003	18.8 ± 1.9	19.0 ± 2.4	17.9 ± 0.8	18.5 ± 0.6
2004	20.0 ± 4.8	20.2 ± 4.9	17.5 ± 0.6	19.2 ± 1.5
Total 2003 + 2004	19.4 ± 0.9	19.6 ± 0.8	17.7 ± 0.3	18.9 ± 1.0

Values are means ± SD.

Table 1.3 indicates the gender of the applicants. Gender was reported as number of female applicants only because few females applied. Only those applicants whose files recorded gender were included.

**TABLE 1.3. NUMBER OF FEMALE APPLICANTS**

Year	Approved	Disapproved	Resubmitted	Total
2003	1	0	0	1
2004	0	1	0	1
Total 2003 + 2004	1	1	0	2

Table 1.4 shows the medication utilization status of the waiver applicants over the past year. This was done because the DoD standards were modified to exclude candidates who were medicated in the year before application. Again, only those applicants whose files recorded date of discontinuation of medication were included ( $n = 82$ ).

**TABLE 1.4. APPLICANTS WHO WERE TREATED WITH MEDICATION IN PAST YEAR**

Year	Approved	Disapproved	Resubmitted	Total
<b>No. treated with medication</b>				
2003	1	4	0	5
2004	4	10	1	15
<b>No. not treated with medication</b>				
2003	32	2	2	36
2004	23	0	3	26
<b>% Treated with medication</b>				
2003	3.0	66.7	0	—
2004	14.8	100.0	25.0	—

Table 1.5 describes the average number of years since the applicants' last treatment with medication for ADHD. All of the disapproved applicants for both time frames were medicated for ADHD within the year before application. Table 1.6 stratifies the applicants according the number of years since medication was discontinued and presents the percentage of applicants within each category per year since last treatment. Again, only those applicants whose files recorded this information were included.



**TABLE 1.5. MEAN YEARS SINCE LAST TREATMENT WITH MEDICATION**

Year	Approved	Disapproved	Resubmitted
2003	3.9 ± 2.5	0	3.3 ± 2.0
2004	2.6 ± 1.7	0	2.0 ± 1.8
Total 2003 + 2004	3.2 ± 0.9	0	2.7 ± 0.9

Values are means ± SD.

Table 1.6 shows that two applicants with ADHD who were treated in the past with medication, were approved in 2004. Of these applicants, one stopped taking medication 8 months before. Another was already enlisted and at the time was still on medication and doing well. Conversely, Table 1.6 indicates that four applicants approved in 2004 had been treated with medication in the past year. These data discrepancies highlight one of the difficulties with the BUMED records. Although the records indicate treatment with medication, they do not necessarily state when the treatment ceased. In addition, applicants for whom treatment was ongoing are not included in Table 1.6, and applicants who were required to resubmit with further evaluation but were temporarily waived were also not included.

**TABLE 1.6. APPLICANTS EVER TREATED IN PAST WITH MEDICATION**

Status	0–0.9 yr		1–1.9 yr		2–2.9 yr		3–3.9 yr		4–4.9 yr		>5 yr	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>2003</b>												
Approved	1	3.2	6	19.4	4	12.9	2	6.5	4	12.9	14	45.2
Resubmitted	0	0	1	20	2	40	0	0	0	0	2	40
<b>2004</b>												
Approved	2	10	3	15	6	30	2	10	3	15	4	20
Resubmitted	1	25	1	25	0	0	1	25	1	25	0	0

Table 1.7 indicates the medications cited in the records and the percentages of applicants who were prescribed each medication at any time in their treatment.

**TABLE 1.7. NUMBER AND PERCENT OF APPLICANTS WHO REPORTED MEDICATION USE DURING THEIR TREATMENT**

Status	Ritalin		Concerta		Adderall		Other		Total
	No.	%	No.	%	No.	%	No.	%	
<b>2003</b>									
Approved	22	66.7	1	3.0	4	12.1	6	18.2	33
Disapproved	2	28.6	3	42.9	1	14.3	1	14.3	7
Resubmitted	6	66.7	0	0	0	0	3	33.3	9
<b>2004</b>									
Approved	7	29.2	2	8.3	6	25.0	9	37.5	24
Disapproved	6	33.3	6	33.3	3	16.7	3	16.7	18
Resubmitted	2	50.0	0	0.0	1	25.0	1	25.0	4

## ***Discussion***

The BUMED database is extensive, but is designed for the purpose of documenting waiver considerations, and not necessarily for epidemiologic study. Accordingly, mention in the waiver consideration records of the diagnosis, treatment, and history of ADHD are not standardized. Specific factors such as date of diagnosis, date of remission, and identity of the practitioner treating the patients are often left out. ADHD treatment was not mentioned other than medication, and the medications were often identified only as “meds” rather than cited names of drugs. In addition, dates of last medication were often estimated. Academic and occupational or social performance is both a diagnostic and DoD criterion. However, most records refer to school performance either generally (e.g., “does poorly in school”) without mentioning school records. For example, in the entire 2004 dataset, seven high school grade point averages were reported, and seven applicants were noted to be high school graduates. In 2003, 18 records mentioned graduation status, and only three included grade point average. The remaining records for 2004 contained no mention of academic standing. It would be beneficial both for diagnosis and for DoD standardization if the specific aspects of the DoD guidelines were reported for each applicant during the physical examination and review. These criteria include date of diagnosis and/or remission, dates of treatment including medication and counseling, and academic and occupational performance. Finally, provider information for each applicant can facilitate follow-up and the review process.

Overall, the total individual waiver considerations decreased from 63 in 2003 to 48 in 2004. This decrease is consistent with the more lenient ADHD accession standards implemented during that time. In addition, all disapproved applicants had taken medication within the past year, and no waiver applicants off medication in the past year were disapproved. This fact implies that the new standard was appropriately applied. Finally, medication history appears to be the primary indication for waiver decisions, whereas passing academic performance is inconsistently applied and assessed.

## ***Acknowledgment***

AMSARA thanks 2LT Marlene Gubata, MS-IV, Tufts University School of Medicine.



# **Asthma Waiver Cases in Marine Corps and Navy Recruits: An Evaluation of Waived and Denied Records from 2003 to 2004**

## ***Introduction***

The National Institutes of Health define asthma as a chronic inflammatory disorder of the airways that causes airway hyperresponsiveness to various stimuli and reversible airway obstruction. In susceptible individuals the disorder causes recurrent episodes of wheezing, breathlessness, cough, and chest tightness. In addition to the classic presentation, asthma can also present as chronic cough or chronic dyspnea. To support the diagnosis of asthma, pulmonary function tests (PFT) such as spirometry can be used to show obstruction with reversibility after bronchodilation or obstruction after a stimulus such as methacholine or exercise.

DoD Instruction 6130.4 is used to define medical conditions that may be associated with premature attrition and morbidity during training and military service. Before 2004, the standards for asthma indicated disqualification for history of asthma, including reactive airway disease, exercise-induced bronchospasm, or asthmatic bronchitis reliably diagnosed at any age. Diagnosis could be either by history of cough, wheeze, and/or dyspnea, persistent or recurrent, for more than 6 months duration. When diagnosis was questionable, PFT could be utilized to show reversible airflow obstruction after bronchodilator or airway hyperreactivity by methacholine or exercise. On the basis of research and follow-up recommendations by AMSARA, these standards were changed in April 2004 to disqualify only those applicants who had the above diagnosis and were symptomatic after age 13. The new standards went into effect throughout MEPCOM in June 2004. The purpose of this study was to estimate the effect on disqualification and waiver considerations for asthma as a result of the new, more lenient, asthma accession standard.

## ***Methods***

Records of all accession medical waiver considerations for asthma among recent applicants for enlisted service in the Marine Corps and the Navy were reviewed. Applicants with other disqualifying conditions beyond asthma were excluded, since the waiver decision would not then be based solely on the medical judgment on the subject's asthma.

The included records were sorted by month and year to include only those applicants with indates falling between 01 June–30 September 2003 and 01 June–30 September 2004. These months were chosen to compare applicants during similar times of the year, both before and after the accession standards were revised. The indate, which is the first day of the in-processing and examination period, was chosen to include all applicants whose medical examination processing began after June. Some applicants applied more than once, showing as duplicate records in the review. Of the duplicate records, only those with the latest date were included.

Records were sorted by year into those being granted waiver (approved), those being denied waiver (disapproved), and those sent for resubmission with additional information such as

medical records, consultation, or PFT. The records that were either approved or disapproved were then reviewed and extracted for the following information: 1) reported age of last medication use, 2) reported age of last symptoms, 3) age of last reported symptom, treatment, or both, 3) whether PFT was performed and, if so, whether the results were abnormal pre- and postbronchodilator forced expiratory volume in 1 second (FEV<sub>1</sub>) values, 5) percent changes in FEV<sub>1</sub>, 6) methacholine challenge test results, 6) gender, 7) age, 8) level of activity, and 9) diagnosis disapproved by review of medical records or consultation.

## Results

Table 1.8 shows records identified in the initial BUMED waiver database search and results after the duplicate records were excluded. Total numbers of applicants for asthma waiver decreased from 2003 to 2004.

**TABLE 1.8. BUMED ASTHMA WAIVER APPLICANT RECORDS**

Year	Approved	Disapproved	Resubmitted	Total
2003	73	16	34	123
2004	38	12	10	60
Total	111	28	44	183

Table 1.9 shows the asthma waiver considerations for which a final decision was made during the two periods studied. The percentage approved is slightly higher, although the difference was not statistically significant.

**TABLE 1.9. PERCENTAGE OF APPLICANTS APPROVED AND DISAPPROVED BY YEAR**

Year	Approved	Disapproved
2003	82.0	18.0
2004	76.0	24.0

Because the DoD asthma standards were modified to only disqualify candidates with symptoms reported after age 13, Table 1.10 shows the number and percentage of applicants with either reported symptoms or treatment of asthma after their 13<sup>th</sup> birthday who were approved and disapproved per year. As with the overall approval and disapproval percentages seen above, both increased with this subset.

**TABLE 1.10. NUMBER AND PERCENTAGE OF APPLICANTS WITH EITHER TREATMENTS OR SYMPTOMS AFTER THEIR 13<sup>TH</sup> BIRTHDAY PER YEAR AND DISPOSITION**

Year	Approved		Disapproved		Total no.
	No.	%	No.	%	
2003	22	30.1	10	62.5	32
2004	16	42.1	8	66.7	24

Table 1.11 shows the waiver approvals and disapprovals by the age at last treatment or symptoms for the two study time periods. Only those records for which such age was provided are included. It is seen that waivers were approved in the great majority (93.8%) of



cases in which last symptoms or treatment occurred at age 0–12. For those considerations in which symptoms or treatment were more recent (age 13+), the percentage approved was reduced to 68.8%.

**TABLE 1.11. NUMBER AND PERCENTAGE OF APPLICANTS STRATIFIED BY AGE OF LAST TREATMENTS OR SYMPTOMS**

Year	Age 0–12		Age 13+		
	No.	%	No.	%	
2003	Approved	30	93.8	22	68.8
	Disapproved	2	6.2	10	31.2
2004	Approved	9	23.7	16	66.7
	Disapproved	3	8.3	8	33.3

In addition to an applicant's history, PFT values were utilized to obtain objective evidence of airway obstruction. Table 1.12 shows the number and percentage of applicants with normal PFT results. The number of applicants approved with normal PFT results increased from 2003 to 2004. No applicants with normal PFT results were disapproved in 2004. However, applicants without a PFT evaluation remained. The number and percentage of missing PFT results per year and disposition are also shown in Table 1.13. The total number of records without PFT results had decreased. The significant impact of this lies in the percentage of applicants who were approved without PFT results, which is consistent with a more distant history of asthma (earlier than 13 years) rather than a current disease.

**TABLE 1.12. NUMBER AND PERCENTAGE OF APPLICANTS WITH AND WITHOUT PFT RESULTS**

Year	Approved		Disapproved		Total
	No.	%	No.	%	
With normal PFT results					
2003	36	49.3	2	12.5	38
2004	31	81.6	0	0.0	31
Without PFT results					
2003	36	49.3	7	43.8	43
2004	7	18.4	5	41.7	12

As mentioned in the introduction, bronchodilator response recorded as percent changes in FEV<sub>1</sub> are used for diagnosis of asthma by showing that obstruction is at least partially reversible. In 2003, DoD Instruction 6130.4 listed the criteria of an FEV<sub>1</sub> change of >15% postbronchodilator for a diagnosis of asthma. Table 1.13 reports the number and percentage of applicants with an abnormal, normal, or unknown response to bronchodilator per year and disposition. The percentages of unknown bronchodilator response (including reasons such as the test not being conducted) are high, showing the lack of utilization of postbronchodilator spirometry results. However, with those who had results, there is a higher percentage of approval with normal compared with abnormal results. Of those approved, the percent with normal results decreased from 19.2% to 15.8% from 2003 to 2004. This decrease may be because applicants without current asthma are immediately accepted instead of being disquali-



fied or submitted for waiver. The numbers are small for 2004 and must be interpreted cautiously given the small numbers and the relatively large number of unknown results.

**TABLE 1.13. APPLICANTS WITH ABNORMAL, NORMAL, OR UNKNOWN BRONCHODILATOR RESPONSE PER YEAR AND DISPOSITION**

Year	Abnormal		Normal		Unknown	
	No.	%	No.	%	No.	%
2003						
Approved	1	1.4	14	19.2	59	80.8
Disapproved	2	12.5	0	0.0	13	81.3
2004						
Approved	1	2.6	6	15.8	31	81.6
Disapproved	1	8.3	3	25.0	8	66.7

Several records also reported the level of activity in terms of the sports participation, exercise, or physically demanding jobs. Table 1.14 summarizes the number and percentage of applicants with a level of activity mentioned in each category of disposition and year. Of the total numbers with level of activity mentioned, more were approved (21 and 4 in 2003 and 2004, respectively) than disapproved (6 and 2 in 2003 and 2004, respectively). However the total number of reports recording level of activity per year had decreased in both the approved and disapproved. Also, the percentage approved with documentation of level of activity had decreased from 28.8% to 10.5%. These findings may be due to the decreased need to document symptoms with activity for those with symptoms before age 13.

**TABLE 1.14. NUMBER AND PERCENTAGE OF APPLICANTS WITH LEVEL OF ACTIVITY REPORTED**

Year	Approved		Disapproved	
	No.	%	No.	%
2003 ( <i>n</i> =27)	21	28.8	6	37.5
2004 ( <i>n</i> = 6)	4	10.5	2	16.7

Table 1.15 shows the number and percentage of records that reported that the waiver application had been disapproved, either by review of prior medical records or after consultation. Note the large increase in the percentage of disapproved diagnoses.

**TABLE 1.15. NUMBER AND PERCENTAGE OF APPLICANTS WITH WAIVER DISAPPROVED**

Year	Approved		Disapproved	
	No.	%	No.	%
2003				
No	10		7	
Yes	19	26.0	0	0.0
Missing	48		9	
2004				
No	9		5	
Yes	8	21.1	1	8.3
Missing	21		6	

## ***Discussion***

Between 2003 and 2004, there was a decrease of over 50% of applicants in 2004 (123 in 2003 vs 60 in 2004) who were evaluated by BUMED for a history of asthma before enlistment into the Marine Corps. With the more lenient standards, fewer asthma waiver considerations were required, although the percentage approved was slightly but not significantly lower. Those approved since implementation of the new standard presumably have mild asthma with an increased level of activity compared to those who are disapproved. In the group of applicants with no numerical age of last symptoms but a reported age of "childhood," a greater percentage is approved in 2004, which is consistent with the new standards. Using PFT to assist in questionable diagnoses is shown to help with the decision to approve. Even though the number of PFTs performed increased in 2004, this test is still underutilized in the entire group of waived applicants. The percentage of approvals with negative bronchodilator spirometry results increased; however, the numbers with bronchodilator results are small. Level of activity and the ability to disapprove the diagnosis of asthma may also be positive predictors for approving applicants with a self-reported history of asthma.

This study has several limitations. First, the series of applicants is small. Strengths of differences observed would be improved with a larger sample size. Standardization of factors in the diagnosis, treatment, and history of asthma for each applicant was poor. Factors such as specified dates of last symptoms or treatments were not recorded. Of those recorded, the dates were not always proven by medical records and were often estimated. Many records did not report any age of last symptoms or treatments, which made applying the new standards more difficult. More objective data of asthma using spirometry results were only utilized in a little over half of the cases. Of those used, PFT is limited by the dependence on both patient effort and the operator. The inconsistency of reporting PFT results (some using abnormal vs normal and some using numerical values) did not guarantee that results were read without variability in interpretation.

Standardizing the evaluation and reporting of clinical criteria in asthma waiver applicants is recommended. These criteria include date of last symptoms or treatment and PFT results including either postbronchodilator results or tests of hyperresponsiveness (e.g., the methacholine challenge test or exercise-induced PFT). Moreover, recording the current level of physical activity and/or fitness may help. Finally, provider information for each applicant can facilitate follow-up and the review process.

Future studies would include a review of Marine Corps asthma waiver applicants over a 12-month period occurring before and after the change of standards. In addition to studying whether the new standards are being followed, the groups of recruits accepted both before and after the new standards could then be followed to compare morbidity and attrition. Finally, a comparison in frequency of asthma disqualification by MEPS before and after the current standard will further assess the impact of the change in policy.

## ***Acknowledgment***

AMSARA thanks 2LT Ator Yacoub, MS-IV, Wayne State University School of Medicine.



# Hearing Loss Waiver Cases in Marine Corps and Navy Recruits: An Evaluation of Approved and Denied Waivers from 1997 to 2000

## **Introduction**

The purpose of this study was to determine whether military guidelines are being followed in the conduct of MEPS audiograms, and whether any changes should be made to those guidelines. A sample of 150 accession medical waiver considerations for hearing deficiency was selected in the following manner: 25 Marines waiver approvals, 25 Navy waiver approvals, and 50 waiver denials for each of these service branches. Each of these subsamples was randomly selected. Cases were retrospectively reviewed within the BUMED database to include recruits who were approved in the Marine Corps ( $n = 25$ ) and Navy ( $n = 25$ ) and cases who were denied in the Marine Corps ( $n = 50$ ) and Navy ( $n = 50$ ). Additional denied cases were analyzed to ascertain the final disposition of these recruits, i.e., whether recruits were granted a waiver or were denied a waiver after an otolaryngologist evaluation.

As described in paragraph E1.5.1.3 of DoD Instruction 6130.4 issued in April 2004, standards for either ear were created to assess individual cases. These standards were grouped to include the following for each ear:

- Standard 1: tone at 500, 1,000, and 2,000 cycles/sec of not more than 30 dB on the average
- Standard 2: tone at 500, 1,000, and 2,000 cycles/sec with no individual level greater than 35 dB
- Standard 3: tone at 3,000 cycles/sec not more than 45 dB
- Standard 4: tone at 4,000 cycles/sec not more than 55 dB

## **Data**

Samples of approved and disapproved waiver consideration records were reviewed and compared against the above standards. A synopsis of the number of recruits for whom no medical records could be located within the BUMED database is shown in Table 1.16. Table 1.16 indicates that 61% of denied records could be reviewed, whereas only 52% of approved records could be reviewed. The striking number of missing records from the randomly selected cases is highlighted in Table 1.17. All subsequent tables will exclude these patients whose records were unavailable for review.

**TABLE 1.16. MISSING RECORDS BY WAIVER OUTCOME AND SERVICE**

Service	Denied ( $n = 100$ )	Approved ( $n = 50$ )
Navy ( $n = 75$ )	21	12
Marines ( $n = 75$ )	18	12
Total	39 (39%)	24 (48%)

Analysis of waiver data revealed an increase in approved (35%) versus denied (23%) recruits who resubmitted with a recommended report from an otolaryngologist to a MEPS (Table 1.17).



**TABLE 1.17. RESUBMISSIONS BY WAIVER OUTCOME AND SERVICE**

Service	Denied (n = 61)	Approved (n = 26)
Navy	6	4
Marines	8	5
Total	14 (23%)	9 (35%)

Table 1.18 shows a similar distribution of repeated audiograms on the same day for Navy and Marine Corps recruits. However, audiograms were more likely to be repeated on the same day if a recruit was eventually deemed denied versus one who was said to be approved. This finding suggests that the technicians at the MEPS of these particular 14 denied cases were not following recommendations to perform one repeat audiogram for each person and were more likely to repeat an initial audiogram if this test had revealed an initial failure for a given standard. Frequency of repeat audiogram was more likely in disapproved than approved cases.

**TABLE 1.18. NUMBER OF REPEAT AUDIOGRAMS ON THE SAME DAY FOR THE SAME PERSON BY WAIVER OUTCOME**

Service	Denied (n = 61)	Approved (n = 26)
Navy	7	0
Marines	7	1
Total	14 (23%)	1 (8%)

Waiver records were analyzed and recorded in Tables 1.19 and 1.20 to ascertain the prevalence of prior conditions reported to MEPS officials. Note the infrequency of each of the indicated conditions; however, substantially more prior conditions were reported among recruits who were eventually denied entry into a given service. Also, the two cases of approved recruits with recorded otitis media should have been rejected as dictated by paragraph E1.5.1.3 of DoD Instruction 6130.4.

**TABLE 1.19. HISTORY OF PRIOR CONDITIONS BY SERVICE AND WAIVER OUTCOME**

Condition	Navy		Marine Corps	
	Denied	Approved	Denied	Approved
Ear surgery	3	0	2	0
Otitis media	2	0	2	2
Otosclerosis	0	0	1	0
Noise exposure	1	1	3	0

**TABLE 1.20. HISTORY OF PRIOR CONDITIONS BY WAIVER OUTCOME, SERVICES COMBINED**

Condition	All denied		All approved	
	No.	%	No.	%
Ear surgery	5	36	0	0
Otitis media	4	29	2	67
Otosclerosis	1	7	0	0
Noise exposure	4	29	1	33
Total	14	100	3	100

Data were analyzed for trends in standard failures. Table 1.21 highlights the total standards failed for Navy and Marine Corps recruits. Tables 1.21–1.23 do not reflect the actual standard that was failed but rather the cumulative total of standards that were failed for a given group. Table 1.22 depicts the number and percent of all denied and approved recruits. Table 1.23 groups the audiogram failures into one or more standards failed versus no standards failed by waiver outcome. The differences between these groups, shown in Table 1.23, were not statistically significant (chi-square Fisher exact, two-tailed test,  $p = 0.20$ ).

**TABLE 1.21. NUMBER OF STANDARDS FAILED BY WAIVER OUTCOME:  
NAVY AND MARINE CORPS**

Standards failed	Navy		Marine Corps	
	Denied	Approved	Denied	Approved
None	3	1	5	5
One	8	11	6	3
Two	10	1	14	5
Three	4	0	3	0
Four	4	0	4	0

Particular attention should be paid in Tables 1.22 and 1.23 to the high number of recruits who were approved although they had failed one or more standards. Although some discretion can possibly be afforded to a MEPS official either purposely or unknowingly accepting a recruit who failed only one standard, an alarmingly high percent (23%) of recruits who were granted a waiver had failed two standards. A similar situation exists among the waiver denial group – 13% of these individuals had passed every standard according to their recorded audiometric values. This situation highlights the all-too-present misclassifications within the current recording system.

Why those recruits were denied entrance after having passed all standards was examined further. Among these eight Navy and Marine recruits, audiograms for all three Navy recruits were incorrectly recorded. For example, the MEPS official wrote that the Navy recruit had excessive hearing loss bilaterally; however, the recorded values read all zeroes. Incorrectly recorded audiograms were also present for three of five Marine recruits who were denied entrance. For the additional two recruits in this category, one was reported to be wearing hearing aids and to have excessive hearing loss even though all recorded values were zero. No recruit wearing a hearing aid should have an audiogram. The final Marine recruit in this category had nonzero readings and did not fail a given standard; however, the MEPS technician reported that the recruit needed to be seen for “retrocochlear work up.” For these reasons, Table 1.23 should report that after a record review instead of eight out of 61, only one out of 61 denied recruits had not failed one or more standard.



**TABLE 1.22. STANDARDS FAILED BY WAIVER OUTCOME: SERVICES COMBINED**

Hearing standards failed	All denied		All approved	
	No.	%	No.	%
None	8	13	6	23
Standard 1	14	23	14	54
Standard 2	24	39	6	23
Standard 3	7	11	0	0
Standard 4	8	13	0	0

**TABLE 1.23. GROUPED STANDARDS FAILED BY WAIVER OUTCOME: SERVICES COMBINED**

Grouped standards failed	All denied		All approved	
	No.	%	No.	%
One or more	53	87	20	77
None	8	13	6	23
Total	61	100	26	100

Table 1.24 summarizes which standard was failed, in either or both ears, among Navy and Marine Corps recruits and reflects the percentage of individual standards that were failed within a certain group. Table 1.25 groups which standards were failed by all approved and denied recruits. For Tables 1.24 and 1.25, individuals can be counted more than once according to the standards they failed; therefore, each individual can fail more than one standard. Standards 1 and 2 are not mutually independent because they consider the same frequencies (500, 1000, and 2000). The category entitled "other" in Tables 1.24 and 1.25 includes audiogram records that were blatantly incorrect. For example, all four standards were passed by a recruit who could not complete an audiogram and by another recruit who was deemed not physically qualified (due to history of ear surgery).

Table 1.25 shows that although similar trends for standard 4 and misclassified data, or "other," existed for recruits who were denied versus approved, 24% of denied recruits failed standard 2, whereas only 18% of approved recruits failed this standard. Similarly, 23% of denied recruits failed standard 2, whereas only 18% of approved recruits failed this standard. Surprisingly, a greater percentage (43%) of approved recruits failed standard 1, whereas only 30 % of denied recruits passed standard 1. This finding suggests that standard 1 is not as effective as standards 2 and 3 in predicting the final waiver outcome.

**TABLE 1.24. AUDIOGRAM STANDARDS FAILED BY SERVICE AND WAIVER OUTCOME**

Hearing standard	Navy				Marine Corps			
	Denied		Approved		Denied		Approved	
	No.	%	No.	%	No.	%	No.	%
Standard 1	19	32	6	43	18	29	6	43
Standard 2	15	25	1	7	14	22	4	29
Standard 3	12	20	4	29	16	25	1	7
Standard 4	10	17	2	14	11	17	2	14
Other	3	5	1	7	4	6	1	7
Total	59	100	14	100	63	100	14	100



**TABLE 1.25. AUDIOGRAM STANDARD FAILED, SERVICES COMBINED, BY WAIVER OUTCOME**

Hearing standard	All denied		All approved	
	No.	%	No.	%
Standard 1	37	30	12	43
Standard 2	29	24	5	18
Standard 3	28	23	5	18
Standard 4	21	17	4	14
Other	7	6	2	7
Total	122	100	28	100

Each standard was then further analyzed. This analysis was considered as a nested case control in which the outcome was approved versus disapproved, and exposure was passed versus failed audiogram. Odds ratio and relative risk of an approved waiver given a passing audiogram by a given standard were calculated and the results are presented in Table 1.26. Hearing standards 2 and 3 were found to be statistically significant. These findings suggest that standards 2 and 3 are stronger predictors of a recruit's final hearing status than the other standards.

**TABLE 1.26. IMPACT OF SPECIFIC HEARING STANDARDS PERFORMANCE ON LIKELIHOOD OF WAIVER DENIAL**

Hearing standard	Approved	Denied	Total
<b>Standard 1</b>			
Pass	14	24	36
Fail	12	37	49
Total	26	61	87
chi-square = 0.21; odds ratio = 1.80 (95% CI = 0.65, 5.04) relative risk = 1.50 (95% CI = 0.79, 2.87)			
<b>Standard 2</b>			
Pass	21	32	53
Fail	5	29	34
Total	26	61	87
chi-square = 0.01; odds ratio = 3.81 (95% CI = 1.15, 13.32) relative risk = 2.69 (95% CI = 1.12, 6.46)			
<b>Standard 3</b>			
Pass	21	33	54
Fail	5	28	33
Total	26	61	87
chi-square = 0.02; odds ratio = 3.56 (95% CI = 1.08, 12.47) relative risk = 2.57 (95% CI = 1.07, 6.15)			
<b>Standard 4</b>			
Pass	22	40	62
Fail	4	21	25
Total	26	61	87
chi-square = 0.07 odds ratio = 2.89 (95% CI = 0.79, 11.42) relative risk = 2.22 (95% CI = 0.85, 5.79)			

Further analysis was completed to compare the occurrence of certain frequencies that may better predict the waiver outcome of those recruits who failed or passed an audiogram. Table 1.27 depicts the count of individuals who failed a certain decibel level among Navy and Marine Corps recruits. Table 1.28 shows the total number of failed and passed audiograms by groups. For Tables 1.27 and 1.28, individuals can be counted more than once according to the standards they failed; therefore, each individual can fail more than one standard. The chi-square value comparing these decibel levels is reported in Table 1.29 and was found to be not statistically significant.

**TABLE 1.27. FAILED AUDIOGRAMS BY FREQUENCY, SERVICE, AND WAIVER OUTCOME**

Counts by frequency	Navy		Marine Corps	
	Denied	Approved	Denied	Approved
500	9	2	13	5
1,000	16	0	12	4
2,000	19	4	13	1
Median of 500, 1,000, and 2,000	17	1	17	4
3,000	12	5	17	1
4,000	12	2	12	2

**TABLE 1.28. FAILED AUDIOGRAMS BY FREQUENCY AND WAIVER OUTCOME:  
SERVICES COMBINED**

Counts by frequency	All denied		All approved	
	No.	%	No.	%
500	22	13	7	23
1,000	28	17	4	13
2,000	32	19	5	16
Median of 500, 1,000, and 2,000	34	20	5	16
3,000	29	17	6	19
4,000	24	14	4	13
Total	169	100	31	100

Analysis was performed to compare the frequency of recruits who at a given frequency (in Hertz) were scored a given audiogram decibel rating. Table 1.29 shows that a greater number of recruits who were within the accession standard range were eventually approved for their audiogram than denied waivers. Cells that are shaded in Table 1.29 represent those that exceeded the accession standard for the given frequency. Interestingly, many recruits were ultimately approved for their audiogram, although they failed to meet a given standard. Although the vast majority of these cases were within 15 dB of passing the accession standard at a given frequency, this finding suggests that some leeway is being afforded to recruits who seemed close to passing a given standard. Conversely, a greater proportion of recruits who were not passed for their audiogram were outside this apparent 15-dB “grace window.” This finding suggests that although some trained technicians may use their discretion about passing or failing recruits who were close to passing a given standard, those recruits who clearly did not meet a given standard and fell outside the 15-dB range were ultimately failed.

TABLE 1.29. AUDIOGRAM RESULTS (IN DECIBELS) BY FREQUENCY AND WAIVER OUTCOME

Frequency (dB)	500		1,000		2,000		3,000		4,000	
	Denied	Appr	Denied	Appr	Denied	Appr	Denied	Appr	Denied	Appr
0	12	3	11	4	7	1	7	2	8	2
5	5	2	5	3	3	2	0	2	0	0
10	4	5	5	2	4	3	4	1	2	1
15	7	2	4	4	1	3	1	0	0	2
20	2	2	3	2	4	5	4	3	3	5
25	2	2	3	3	3	1	2	3	2	0
30	7	3	4	3	3	2	1	3	1	2
35	2	0	3	1	1	3	2	2	1	1
40	3	6	7	3	4	5	5	2	5	4
45	7	0	3	1	6	0	7	2	6	2
50	2	0	4	0	8	1	8	2	8	2
55	1	1	4	0	2	0	3	2	4	1
60	3	0	2	0	7	0	6	2	4	0
65	1	0	2	0	2	0	3	0	7	2
70	2	0	0	0	4	0	6	0	7	0
75	0	0	0	0	0	0	0	0	1	1
80	0	0	1	0	2	0	2	0	1	1
>85	1	0	0	0	0	0	0	0	1	0
Total	61	26	61	26	61	26	61	26	61	26

Shaded values represent recruits that exceeded the accession standard for the given frequency.

Appr, approved.

## Discussion

Analysis of data revealed a high number of missing, misclassified, and incorrectly recorded charts among Navy and Marine recruits. Regulations and standards for performing audiograms were not uniformly met; e.g., audiograms were repeated after the recruit failed his or her initial recordings, and recruits with a history of middle or inner ear infections were eventually deemed to have passed their audiograms. However, those recruits who reported a prior ear condition were correctly more likely to be denied. An increased number of eventually approved recruits resubmitted to a MEPS with a recommended report from an otolaryngologist. Thus, those recruits who may have severely failed their audiograms were less likely to resubmit their application than those “close misses” who may benefit from having seen an otolaryngologist.

Some recruits were said to have passed an audiogram after having failed one or more standards or were said to have failed after having passed every standard. This all-too-present misclassification of data highlights the need to modify the current recording method. Given that certain standards appear to be better predictors of the eventual outcome of a recruit’s hearing status and that numerous fields exist for MEPS technicians to incorrectly record the findings, consideration should be given to limiting the number of fields to findings for standards 2 and 3. As depicted in Tables 1.25 and 1.26, standards 2 and 3 more correctly captured those recruits who were eventually accepted versus denied, whereas standards 1 and



4 showed no significant difference in correctly classifying recruits. In fact, standard 1 appears to be more detrimental to correct classification of the ultimate disposition of a recruit's final approval or rejection status.

Another possible solution to the potential mistaken reporting of data is to require that all audiograms be typed into programs for a recruit who does not pass a given standard. Then the program will automatically generate a failure for that recruit and not allow a technician to interpret, restart, or overlook a recruit who may have barely missed one standard. This programmed system would also eliminate the current system in which a technician records the audiogram onto paper, and later someone else transcribes the numerous data cells into the BUMED database.

This study highlights the need for hearing screening instrument standardization and automation of test data entry and hearing profiling during the evaluation of military applicants for hearing loss. Previous studies by AMSARA have examined the survival of recruits waived for hearing loss and premature medical discharges (EPTS) for hearing loss. Together these studies will assist DoD in the development of evidence based hearing accession standards and improve hearing loss screening of military applicants.

#### *Acknowledgment*

AMSARA thanks 2LT Joseph Woodring, MS IV, Touro University College of Osteopathic Medicine.

# **ABSTRACT: Review of Initial Entry Training FY03 Discharges at Fort Leonard Wood for Accuracy of Discharge Classification Type\***

## ***Background***

Over 10% of new Army enlistees are discharged before completion of initial entry training (IET). To reduce this attrition, an accurate and complete understanding of the reasons for these discharges is vital. Army procedures require each discharge to be classified by reason, although only one reason is allowed per enlistee. This study reviews all discharges at one IET site (Fort Leonard Wood, Missouri) to determine the evidence and frequency of coexistence of multiple causes for discharge within the three most frequently cited discharge categories: EPTS, entry level separation, and other medical and physical.

## ***Methods***

All IET discharge records ( $n = 2,889$ ) from Fort Leonard Wood from 1 October 2002 through 30 September 2003 were included. Random samples of discharges of the three most common types were reviewed for coexistence of reasons for discharge. In particular, nonmedical discharges were reviewed for possible medical coexistence, and medical discharges were reviewed for administrative coexistence. Evidence for administrative coexistence was gleaned from counseling records, and evidence for medical coexistence was gleaned from both counseling records and outpatient clinic visit records.

## ***Results***

Among EPTS discharges there was little evidence of administrative coexistence, indicating that this discharge type is used only for discharges related to a preexisting medical condition. Suggestive evidence of medical coexistence was found in 30% of entry level separation discharges, and clear evidence of medical coexistence was found by record review in 13% of entry level separation discharges. Over 50% of the discharges classified as other medical and physical had suggestive evidence of mental health involvement, and 17% had clear evidence of chronic conditions likely to have existed before service.

## ***Discussion***

The results of this study suggest a significant proportion of IET discharges have more than one potential reason. In particular, medical conditions may be much more involved in discharges than would be indicated by a superficial review of discharge classifications. Other medical and physical discharges may include individuals with either preexisting medical conditions (including mental disorders) or administrative issues that could result in discharge. Relying on discharge classifications to track trends in specific causes (e.g., mental health disorders) may significantly underestimate their prevalence. The use of multiple databases and occasionally record reviews, while labor intensive, may assist in more accurately measuring the burden of preexisting disease as related to attrition in IET.

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\* Full article submitted for publication.



# **Case Series Review of Recruits Discharged for Myopia in 2000–2002**

## ***Introduction***

Myopia, commonly known as nearsightedness, is the most frequent cause of vision loss throughout the world. It develops as a result of abnormal lengthening of the eye or changes in the curvature of the lens [1]. This causes light to be focused in front of the retina rather than directly on it, resulting in a blurred image. Genetic and environmental factors have been associated with the development of myopia. However, the exact mechanism by which these factors lead to changes in eye morphology and vision loss is unclear [2].

Usually developing between age 6 and 14 years, myopia is a frequent finding among young adults and is estimated to affect 20–30% of the U.S. population [2]. Risk factors include a family history of myopia and a history of significant time spent performing close eye work such as reading or playing video games. Although treatments such as eyeglasses, contacts, and laser refractive surgery are available to improve vision, many people with myopia cannot have their vision fully corrected. Furthermore, severe myopia is associated with blinding conditions such as retinal detachment, macular degeneration, and glaucoma [1]. Currently, the progression of myopia cannot be prevented or slowed.

Good quality vision is necessary for any member of the armed forces to function effectively. Servicemembers with poor vision may put themselves or their colleagues in danger both on and off the battlefield. For this reason, strict screening measures are in place to restrict people with significant vision problems from joining the military. DoD Instruction 6130.4 lists the following standards for medical disqualification for defects in vision [3]:

1. Distant visual acuity of any degree that does not correct with spectacle lenses to at least one of the following:
  - a. 20/40 in one eye and 20/70 in the other eye
  - b. 20/30 in one eye and 20/100 in the other eye
  - c. 20/20 in one eye and 20/400 in the other eye
2. Near visual acuity of any degree that does not correct to 20/40 in the better eye
3. Any refractive error in spherical equivalent of worse than  $-8.00$  or  $+8.00$  diopters; if ordinary spectacles cause discomfort by reason of ghost images or prismatic displacement; or if corrected by orthokeratology or keratorefractive surgery
4. Complicated cases requiring contact lenses for adequate correction of vision, such as corneal scars and irregular astigmatism

Despite these measures, a significant number of new recruits are discharged early in their careers because of myopia and other causes of vision loss. AMSARA examined EPTS discharges for myopia to assess how vision screening can be improved for new applicants.

## ***Methods***

A retrospective descriptive analysis of recruits discharged for vision loss in 2000–2002 was conducted. EPTS discharge records (DA4707, SF600, SF93, and SF88) received by MEPCOM with a primary or secondary diagnosis of myopia were reviewed. Cases included

active duty, reserve, and National Guard discharges from the Army, Navy, Marines, Air Force, and Coast Guard for 2000–2002. A total of 159 cases were identified that fit these criteria. Of these, 16 were excluded from the analysis because data were lacking in the records obtained.

Data extracted from recruit medical records included service, gender, age, race, date of EPTS discharge, MEPCOM discharge categorization code, weeks of training completed on discharge, primary and secondary diagnoses, visual acuity and refractive error measured at MEPS and specialist sites, physical profile function capacity (PULHES system), vision disqualifications, and waiver status. The severity of myopia is directly related to the refractive error of the eye. It is determined by measuring the spherical refractive error in the least myopic meridian. Myopia can also be expressed in terms of spherical equivalent, which is a calculated value that uses measured values of both spherical and cylindrical refractive error. If not already included in the medical records, spherical equivalent was calculated from refractive error data using the following equation:

$$\text{spherical equivalent} = \text{spherical refractive error} + \frac{1}{2}(\text{cylindrical refractive error})$$

Both refractive error and spherical equivalent are expressed in diopters and are negative numbers when associated with myopia. Spherical equivalent was used to characterize the severity of myopia among EPTS discharges as follows:

- 0.25 to –3.0 diopters = mild myopia
- 3.0 to –8.0 diopters = moderate myopia
- more than –8.0 diopters = severe myopia

In addition to severity based on visual acuity and spherical refraction, the vision status of recruits was characterized using the physical profile functional capacity guide, also known as the PULHES system. Under this system, each of six functional areas (physical capacity, upper extremities, lower extremities, hearing, eyes, psychiatric) are evaluated and rated on a scale of 1 to 4. A profile status of 3 or 4 is considered disqualifying. Vision profile status is rated as follows [4]:

1. Uncorrected visual acuity of 20/200 or worse, correctable to 20/20 in each eye
2. Distant visual acuity correctable to not worse than 20/40 and 20/70, 20/30 and 20/100, or 20/20 and 20/400
3. Uncorrected distant visual acuity of any degree that is correctable to not less than 20/40 in the better eye
4. Visual acuity worse than profile status 3

Finally, MEPCOM discharge categorization codes were collected for each recruit. This system characterizes the reason an applicant is accepted for appointment, enlistment, or induction despite prior existing medical problems. MEPCOM defines these codes as follows:

- A Applicant was unaware of the existence of the condition
- B Potentially disqualifying condition that was not felt to be disqualifying, based on sound clinical judgment
- C Condition that should have been detected and disqualified at the MEPS
- D Condition undetected due to concealment of history by the applicant
- E Condition waived by the appropriate service waiver authority
- W Insufficient data on which to determine a code



## Results

From 2000 through 2002, MEPCOM received EPTS discharge records for 159 recruits with a primary or secondary diagnosis of myopia. Of these, 16 were excluded from this analysis because data were missing in the records obtained. The demographic distribution of these discharges is illustrated in Table 1.30. Demographic data from the total accession population in 2001 are included for comparison. A larger than expected percentage of cases examined in this review were from the Army. This difference was statistically significant when compared with the 2001 accession population (chi-square = 0.01). Nearly 70% of the cases examined in this review were younger than age 22 years, with a median age of 19 years. However, this population was still significantly older than the accession population in 2001 (chi-square = 0.04). Differences within the other demographic fields were not statistically significant (year of discharge chi-square = 0.07, gender chi-square = 0.44, race chi-square = 0.60). In 2002 discharges dropped noticeably. This drop may be a result of a decreased reporting rather than a true drop in EPTS discharges for myopia. Service-specific variation in EPTS reporting each year hampers the assessment of whether this difference is significant.

**TABLE 1.30. DEMOGRAPHIC DISTRIBUTION OF EPTS DISCHARGES FOR MYOPIA IN 2000–2002**

Demographic	EPTS discharges (n = 143)		Total accession population in 2001 (n = 169,416)*	
	No.	%	No.	%
<b>Service</b>				
Army	64	44.8	62,300	36.5
Navy	41	28.7	44,732	26.5
Marines	16	11.2	29,225	17.2
Air Force	16	11.2	33,159	19.4
Coast Guard	6	4.2		
<b>Year of discharge</b>				
2000	55	37.8	7,759†	34.2†
2001	52	36.4	7,115†	31.4†
2002	36	24.5	7,800†	34.4†
<b>Gender</b>				
Male	114	79.7	139,280	82.2
Female	29	20.3	30,136	17.8
<b>Age</b>				
18–19 yr	74	51.7	101,740	60.1
20–21 yr	24	16.8	34,813	20.5
22–23 yr	12	8.4	15,844	9.4
24–25 yr	14	9.8	8,097	4.8
>26 yr	17	11.9	8,922	5.3
Missing	2	1.4		
<b>Race</b>				
White	95	66.4	108,140	63.8
Black	25	17.5	33,289	19.6
Other	20	14.0	27,987	16.5
Missing	3	2.1		

\* Accession data from Coast Guard not included.

† Represents all-cause EPTS discharges for year indicated, although reporting rates vary by year and service.

Problems with vision other than myopia were common among the cases examined. Out of the 143 cases, 93 had additional diagnosed medical conditions affecting vision. Table 1.31 illustrates the occurrence of comorbid medical conditions involving vision among recruits in

each service. Across all branches of service, astigmatism (defined as a cylindrical refractive error of  $\geq 3.0$ ) was the most common comorbid condition found among recruits discharged for myopia, occurring in 20 cases (14.0%). It was found to occur more often in Navy recruits, which comprised 12 of the 20 cases (60%). Amblyopia was the next most common comorbid condition, which was diagnosed in 15 recruits (10.5%). Abnormal visual field and diplopia were third and fourth on the list of comorbid conditions with an incidence of 7.7% and 4.9%, respectively.

**TABLE 1.31. EYE COMORBIDITY AMONG EPTS DISCHARGES FOR MYOPIA IN 2000–2002**

Diagnosis	Army (n = 64)		Navy (n = 41)		Marines (n = 16)		Air Force (n = 16)		Coast Guard (n = 6)		Total (n = 143)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Astigmatism	4	6.3	12	29.3	0	0.0	3	18.6	1	16.7	20	14.0
Amblyopia	8	12.5	4	9.6	2	12.5	1	6.3	0	0.0	15	10.5
Abnormal visual field	8	12.5	0	0.0	2	12.5	0	0.0	1	16.7	11	7.7
Diplopia	3	4.7	1	2.4	2	12.5	1	6.3	0	0.0	7	4.9
Visual field loss	2	3.1	1	2.4	2	12.5	0	0.0	0	0.0	5	3.5
Keratoconus	3	4.7	1	2.4	0	0.0	1	6.3	0	0.0	5	3.5
Optic nerve atrophy	3	4.7	1	2.4	0	0.0	0	0.0	1	16.7	5	3.5
Other	18	28.1	6	14.6	1	6.3	1	6.3	1	16.7	27	18.9
Total*	68		37		13		9		6		95	

\*These diagnostic categories are not mutually exclusive. A total of 93 cases had two or more diagnoses; 22 cases had three or more diagnoses.

EPTS records contained information about the amount of time in service at discharge for 132 of the 143 cases (92.3%). Table 1.32 illustrates the number of weeks of training completed by recruits before EPTS discharge for myopia. Within every service except the Air Force, the largest percentage of discharges for myopia occurred during the first week of training. Among Air Force recruits, discharge was most likely to occur after the first week of training. For all services, discharge for myopia generally became less frequent over time after the initial 1–2 weeks of training. For most services, only few recruits were discharged after 6 weeks ( $\leq 3.1\%$ ). The exception is the Marine Corps, in which 12.5 % of discharges occurred after 6 weeks of training.

**TABLE 1.32. WEEKS OF TRAINING COMPLETED ON EPTS DISCHARGE FOR MYOPIA IN 2000–2002**

Weeks of training completed	Army (n = 64)		Navy (n = 41)		Marines (n = 16)		Air Force (n = 16)		Coast Guard (n = 6)		Total (n = 143)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<1	28	43.8	21	51.2	5	31.3	3	18.8	3	50.0	60	42.0
1–2	16	25.0	14	34.1	2	12.5	6	37.5	1	16.7	39	27.3
3–4	11	17.2	2	4.9	3	18.8	3	18.8	1	16.7	20	14.0
5–6	4	6.3	2	4.9	0	0.0	2	12.5	0	0.0	8	5.6
>6	2	3.1	1	2.4	2	12.5	0	0.0	0	0.0	5	3.5
Missing	3	4.7	1	2.4	4	25.0	2	12.5	1	16.7	11	7.7



An EPTS discharge may avoid medical disqualification before accession for many reasons. Table 1.33 illustrates the MEPCOM categorization codes given for EPTS discharges for myopia across all branches of service. Being unaware of the existence of a condition was the most common finding among discharges in the Army, Navy, and Air Force. In the Marines, the highest percentage of EPTS discharges was cleared of a potentially disqualifying condition based on sound clinical judgment. Concealment by the applicant was most significant in the Army (18.8%) and the Coast Guard (33.3%). Among all services combined, a total of 15 cases (10.5%) were deemed to have a condition that should have been disqualified at the MEPS. This represented 18.8% of EPTS discharges for myopia in the Marines, 16.7% in the Coast Guard, and 12.5% in the Air Force. A total of 21 cases (14.7%) were waived by the appropriate service waiver authority. This represented 33.3% of cases in the Coast Guard, 24.4% of cases in the Navy, and 12.5 % of cases in the Army.

**TABLE 1.33. EPTS CATEGORIZATION CODES FOR MYOPIA DISCHARGES IN 2000–2002**

MEPCOM code*	Army (n = 64)		Navy (n = 41)		Marines (n = 16)		Air Force (n = 16)		Coast Guard (n = 6)		Total (n = 143)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
A	18	28.1	17	41.5	4	25.0	5	31.3	0	0.0	44	30.8
B	16	25.0	5	12.2	7	43.8	4	25.0	0	0.0	32	22.4
C	7	10.9	2	4.9	3	18.8	2	12.5	1	16.7	15	10.5
D	12	18.8	3	7.3	1	6.3	1	6.3	2	33.3	19	13.3
E	8	12.5	10	24.4	1	6.3	0	0.0	2	33.3	21	14.7
W	3	4.7	4	9.8	0	0.0	4	25.0	1	16.7	12	8.4

\*EPTS categorization codes: A, applicant unaware of the existence of the condition; B, potentially disqualifying condition that was not felt to be disqualifying, based on sound clinical judgment; C, condition that should have been detected and disqualified at the MEPS; D, condition undetected due to concealment of history by applicant; E, condition waived by appropriate service waiver authority; W, insufficient data on which to determine a code.

Table 1.34 displays the number of disqualifications and waivers among EPTS discharges across all services and the distribution of vision profiles using the PULHES system. In general, the number of disqualifications among all services was associated with a corresponding number of waivers and cases with a vision profile of 3. The exceptions include one extra case with a vision profile of 3 in the Army and one extra disqualification in the Coast Guard. Cases with a vision profile of 3 comprise the largest percentage of EPTS discharges in the Coast Guard (33.3%), followed by the Navy (19.5%) and the Army (14.1%).

**TABLE 1.34. DISTRIBUTION OF MEPS DISQUALIFICATIONS AND WAIVERS AMONG EPTS DISCHARGES FOR MYOPIA IN 2000–2002**

	Army (n = 64)		Navy (n = 41)		Marines (n = 16)		Air Force (n = 16)		Coast Guard (n = 6)		Total (n = 143)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Disqualifications</b>	8	12.5	8	19.5	1	6.3	1	6.3	2	33.3	20	14.0
<b>Waivers</b>	8	12.5	8	19.5	1	6.3	1	6.3	1	16.7	19	13.3
<b>Vision profile</b>												
1	24	37.5	11	26.8	5	31.3	5	31.3	1	16.7	46	32.2
2	29	45.3	22	53.7	8	50.0	7	43.8	3	50.0	69	48.3
3	9	14.1	8	19.5	1	6.3	1	6.3	2	33.3	21	14.7
Missing	2	3.1	0	0.0	2	12.5	3	18.8	0	0.0	7	4.9

Myopia can vary in severity, ranging from barely noticeable to significantly debilitating vision loss. Tables 1.35 and 1.36 illustrate the severity of myopia measured among EPTS discharges. Table 1.35 represents data obtained for the less severely affected eye, whereas Table 1.36 represents data from the more severely affected eye. Cases were categorized as mild, moderate, or severe based on spherical equivalent. Furthermore, Tables 1.35 and 1.36 depict the severity of myopia for each case as determined by the MEPS and a specialist. Severe myopia was more commonly diagnosed at the specialist site (49.3% for best eye, 65.8% for worst eye) than at the MEPS (29.2% for best eye, 41.8% for worst eye). A kappa test showed only moderate strength of agreement between the two sites (0.46 best eye, 0.47 worst eye). These data indicate that many cases that were characterized as mild or moderate at the MEPS were later diagnosed with a more severe myopia when evaluated by a specialist.

**TABLE 1.35. SEVERITY OF MYOPIA OF EPTS DISCHARGES IN 2000–2002 MEASURED IN BEST EYE**

Severity at specialist*	Severity at MEPS							
	Mild		Moderate		Severe		Total	
	No.	%	No.	%	No.	%	No.	%
Mild	10	15.4	0	0.0	0	0.0	10	15.4
Moderate	4	6.2	16	24.6	3	4.6	23	35.4
Severe	4	6.2	12	18.5	16	24.6	32	49.3
Total	18	27.8	28	43.1	19	29.2	65	

\*Mild = -0.25 to -3.0 diopters; moderate = -3.0 to -8.0 diopters; severe >8.0 diopters.

**TABLE 1.36. SEVERITY OF MYOPIA OF EPTS DISCHARGES IN 2000–2002 MEASURED IN WORST EYE**

Severity at specialist*	Severity at MEPS							
	Mild		Moderate		Severe		Total	
	No.	%	No.	%	No.	%	No.	%
Mild	12	15.2	1	1.3	0	0.0	13	16.5
Moderate	4	5.1	9	11.4	1	1.3	14	17.8
Severe	5	6.3	15	19.0	32	40.5	52	65.8
Total	21	26.6	25	31.7	33	41.8	79	

\*Mild = -0.25 to -3.0 diopters; moderate = -3.0 to -8.0 diopters; severe greater than -8.0 diopters.

Visual acuity is a common measurement of vision status. Although it can be used to estimate refractive error, visual acuity is indirectly correlated with a patient's vision status in diopters and cannot be used to order a prescription. However, visual acuity can be used to assess a patient's corrected vision. Tables 1.37 and 1.38 illustrate the corrected visual acuity of EPTS discharges for myopia. Table 1.37 represents MEPS data, and Table 1.38 represents data from specialist sites. The shaded cells represent those cases that fall below the accession standards for visual acuity listed in DoD Instruction 6130.4. Eight cases (7.7%) fell below the standards for qualification when examined at a MEPS. A total of 17 cases (18.1%) failed to meet accession standards when examined at a specialist site. This indicates that visual acuity is more likely to be assessed as disqualifying when measured by a specialist rather than at the MEPS.



**TABLE 1.37. VISUAL ACUITY OF EPTS DISCHARGES FOR MYOPIA IN 2000–2002  
MEASURED AT MEPS**

Best eye	Worst eye						
	20/70 and better	20/80– 20/100	20/150– 20/400	Worse than 20/400	Total		
					No.	%	
20/20 and better	62	0	1	1	64	61.5	
20/25–20/30	25	2	1	0	28	26.9	
20/35–20/40	6	0	1	0	7	6.7	
Worse than 20/40	2	1	1	1	5	4.8	
Total	95 (91.3%)	3 (2.9%)	4 (3.8%)	2 (1.9%)	104		

**TABLE 1.38. VISUAL ACUITY OF EPTS DISCHARGES FOR MYOPIA IN 2000–2002  
MEASURED AT SPECIALIST SITE**

Best eye	Worst eye						
	20/70 and better	20/80– 20/100	20/150– 20/400	Worse than 20/400	Total		
					No.	%	
20/20 and better	44	4	4	4	56	59.6	
20/25–20/30	23	0	4	0	27	28.7	
20/35–20/40	2	0	1	0	3	3.2	
Worse than 20/40	8	0	0	0	8	8.5	
Total	77 (81.9%)	4 (4.3%)	9 (9.6%)	4 (4.3%)	94		

Considering the discrepancy between visual acuity measured at the MEPS and specialist site presented in Tables 1.37 and 1.38, note the application of vision accession standards at the MEPS. Table 1.39 illustrates how visual acuity was assessed at the MEPS by showing the distribution of vision profiles assigned at the MEPS and the associated visual acuity status as dictated by the accession standards. Note the 18 cases (17.8%) that were given a disqualifying vision profile of 3 despite a qualifying visual acuity. Also note the six cases that were given a qualifying vision profile of 1 or 2 (6.0%) despite having a disqualifying visual acuity. A kappa test showed a low level of agreement between the MEPS and specialist sites for assigning qualifying and disqualifying vision status ( $\kappa = 0.034$ ).

**TABLE 1.39. VISUAL ACUITY AND VISION PROFILE STATUS ASSIGNED AT MEPS  
FOR EPTS DISCHARGES FOR MYOPIA IN 2000–2002**

Vision profile	Corrected visual acuity					
	Qualifying		Disqualifying		Total	
	No.	%	No.	%	No.	%
1	24	23.8	1	1.0	25	24.8
2	51	50.5	5	5.0	56	55.4
3	18	17.8	2	2.0	20	19.8
Total	93	92.1	8	7.9	101	

## **Discussion**

More than 250,000 applicants receive medical examinations through MEPCOM each year, resulting in 130,000 accessions. A significant number of these applicants have a preexisting myopic condition and receive screening specific for this diagnosis. During 2000–2002, 22,674 EPTS discharges were reported to MEPCOM, averaging nearly 7,600 per year. This case series review showed an average of 53 recruits per year in that same period who received an early discharge for myopia. This represents a small minority of EPTS discharges (0.7%). Nevertheless, myopia is relatively easy to assess, and adequate screening measures should be able to further reduce this value.

The demographic data presented in Table 1.30 indicate that the population receiving EPTS discharges for myopia each year generally approximates the overall accession population in terms of gender and race. However, the characteristics of the population in this review differ with regard to age (slightly older) and branch of service (higher percentage of Army recruits). Other notable characteristics include the amount of training completed on discharge and the incidence of eye comorbidity. Most recruits were discharged early in training, usually within the first 2 weeks. This early discharge seems to indicate that the severity of myopia in these recruits is significant enough to either be noticed early in training or to be caught on initial entrance exam. Also, a large percentage of EPTS discharges had another eye condition co-existing with the myopia. For this reason, comorbidity may be a factor to consider in screening applicants with myopia. However, without knowing the degree of eye comorbidity among the total accession population, judging the validity of such a recommendation is difficult.

Considering the small number of EPTS discharges for myopia each year, MEPCOM appears to be adequately screening applicants for this condition. Furthermore, nearly all applicants with a vision profile status of 3 or worse were appropriately disqualified at the MEPS and received a necessary waiver. However, this subset of applicants represents only a small minority of total EPTS discharges with myopia. A total of 116 of 143 (81%) of the EPTS discharges were rated with a PULHES vision profile of 2 or better at the MEPS. These applicants would later be discharged for myopia that was likely rated 3 or worse under the PULHES system. A review of cases with a vision profile of less than 3 showed a significant number with vision poor enough to warrant a higher profile status. Likewise, a review of cases with a vision profile of 3 showed that many had a corrected visual acuity that was less severe than their vision profile indicated. These observations suggest that the PULHES classification system is not being used appropriately. One reason for this discrepancy may be the confusing nature of the PULHES ratings for vision. Confusion seems most likely when trying to differentiate between a 2 and 3. Clarification of this system may reduce mistakes in screening application for vision in the future. In addition, application of the PULHES rating system may not be uniform across the 65 MEPS worldwide. A review of the accession standards for vision and their application at each site may be necessary to minimize this type of discrepancy in the future.

A significant finding in this case series review is the number of EPTS discharges that were found to have more severe myopia when examined by a specialist after the start of training. The high percentage of EPTS discharges diagnosed with severe myopia at specialist sites indicates a higher sensitivity for detecting myopia at these locations. The explanation for this finding is unclear and would require further investigation. Possibilities include equipment error, human factors, or actual worsening myopia in the period between examinations.



## **Limitations**

Missing data were a common finding when reviewing medical records for this case series review. Although cases with a significant amount of missing data were excluded, this omission ultimately affects the accuracy of results. Underreporting of EPTS discharges is also common among all branches. In 2000–2002, underreporting was particularly notable at Army and Marine Corps training sites. These two factors alone mean that the number of cases in this review may be well below the true number of EPTS discharges for myopia in 2000–2002.

Another limitation is lack of data indicating the amount of time between the MEPS physical exam and the ultimate EPTS discharge date. This gap likely varied widely among recruits, considering that some entered service immediately, whereas others may have taken advantage of delayed entry programs.

## **Recommendations**

Considering that many EPTS discharges were found to have qualifying PULHES vision profiles when examined at MEPS, closely examining the MEPS and the methods used to screen vision would be advisable. The examination should review EPTS discharges given a PULHES vision profile of 2 at the MEPS. This review should examine the vision profiles assigned at each MEPS, what screening techniques are used at each site, and the existence of any errors in equipment or interpretation of results. Particular attention should be paid to differences in the application of vision standards. We also recommend revising the PULHES classification system to include a more defined distinction between profiles 2 and 3.

A myopia waiver survival analysis is being conducted by AMSARA that will attempt to validate the current vision accession and waiver standards. This study may help explain the factors involved in EPTS discharges avoiding early disqualification. Future studies might also include a BUMED waiver study that will clarify the waiver standards in use.

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## **ABSTRACT: Attrition of Military Enlistees with a Medical Waiver for Myopia: 1999–2001\***

### ***Background***

The military requires its members to be physically capable of performing any number of required tasks. The need for competent vision is imperative. Failure to complete IET or an initial service obligation burdens the military in terms of readiness and economics. The primary goal of this study was to determine if recruits who entered active duty in the Army, Navy, Air Force, and Marine Corps between 1 January 1999 and 31 December 2001 with a medical waiver for myopia experienced a greater rate of premature discharge when compared with a demographically matched control group.

### ***Methods***

We conducted a retrospective cohort survival analysis of newly enlisted recruits entering active duty in the Army, Navy, Air Force, or Marine Corps between 1 January 1999 and 31 December 2001 who received a medical waiver for myopia (n=1,589). We matched these individuals to a demographically similar comparison group in a 1:3 ratio. The groups were from entry date onto active duty through either their loss date from active duty or, if not lost, through 31 December 2001. The primary outcome assessed was survival time on active duty. We also analyzed EPTS discharge and all-cause attrition values for study and comparison groups.

### ***Results***

New recruits who entered active duty with a waiver for myopia had the same statistical probability of remaining on active duty during the period as their nonwaivered, fully qualified peers. Recruits with a waiver for myopia also had a low probability of an EPTS discharge for myopia.

### ***Conclusion***

The results tend to validate the myopia waiver processes utilized by the individual branches of the military. The results also lend credence to the belief that current accessioning criteria for myopia may be too restrictive and that reviewing accession standards is appropriate.

### ***Acknowledgment***

AMSARA thanks CPT William Otto, Occupational Medicine Resident, Uniformed Services University of Health Sciences

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\* Full article to be submitted for publication.



# The Trend in Military Applicants from 2000 to 2004

## Introduction

The U.S. military depends on a fairly constant flow of applicants to satisfy its requirements for personnel who meet high standards of overall fitness. Recent reports indicate, however, that the number of young people applying for all branches of enlisted military service has dropped considerably. A similar trend has been reported for applications to the officer ranks: the Army, Navy, and Air Force service academies report that applications for the current academic year dropped 10–20% compared with the previous year.

This study is designed to document recent drops in applications for enlisted service, focusing on only those applicants with no prior service. AMSARA will then examine any such findings for demographic and other patterns. All tabulations are by calendar years.

## Data and Methods

Data on all applicants with no prior military service who undergo an accession medical examination during 2000–2004 at any of the 65 MEPS are used. Numbers of applications are first examined separately by service and component for each year of the period for any changes that extend beyond what might be expected by chance. Such changes are then further examined for demographic and other patterns.

## Results

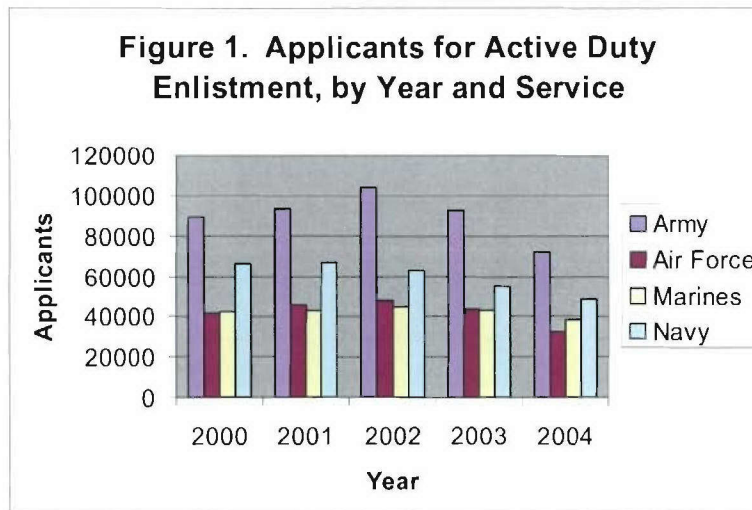
Table 1.40 shows the year with the fewest applicants during 2000–2004, by component and service. For eight of the ten component/service combinations, the fewest applicants in the period were in 2004. The only exceptions were the Navy Reserves and Air Force Reserves. Statistically, it is highly unlikely ( $p < 0.01$ ) that 2004 would be the lowest for so many of the service branches and components in the absence of some systematic change.

**TABLE 1.40. YEAR OF FEWEST APPLICANTS FOR ENLISTED SERVICE BY COMPONENT AND SERVICE: 2000–2004**

Service	Year of fewest applicants
Active duty	
Army	2004
Navy	2004
Marines	2004
Air Force	2004
Reserves	
Army	2004
Navy	2002
Marines	2004
Air Force	2000
National Guard	
Army	2004
Air Force	2004

Figure 1.1 shows counts of applicants for active duty enlisted personnel over the period considered by service. It is apparent that for each service other than the Navy, the number of applicants peaked in 2002; the peak for the Navy was 2001. Applicant numbers returned in 2003 to roughly the same levels seen in 2001 for the Army, Air Force, and Marines. The Navy and Marines saw a drop of just over 10% in 2004 versus 2003.

All services show a clear decline in applicants during 2004 compared with 2000–2003. The Air Force experienced a drop of over 25% in 2004 relative to 2003, and the Army had 22% fewer applicants. The Navy and Marines saw a drop of just over 10% in 2004 versus 2003.



**FIGURE 1.1. APPLICANTS FOR ACTIVE DUTY ENLISTMENT, BY YEAR AND SERVICE.**

Tables 1.41–1.43 show the percentage changes in numbers of military applicants, all services combined, in 2003 and 2004 by several demographic factors. It is seen that the reductions in applicants are fairly widespread across demographic groups. One demographic group with an increase in applicants was that of applicants with low AFQT scores applying for service in the National Guard or reserves. Another was the group aged 26 or more years at the time of application. Although increased numbers were seen for this group in all service components, the increase occurred only in 2003, with a retraction in 2004 relative to 2003.



**TABLE 1.41. PERCENTAGE CHANGES IN ACTIVE DUTY APPLICANTS  
IN 2004 RELATIVE TO 2003**

Group		Compared with previous year		Compared with 2002
		2003	2004	2004
<b>AFQT</b>				
	>65	0	-20	-20
	50-64	-11	-20	-29
	30-49	-23	-13	-33
	<30	-16	-8	-23
<b>Age</b>				
	17-20 yr	-13	-16	-27
	21-25 yr	-6	-21	-26
	26+ yr	22	-32	-17
<b>Education</b>				
	Less than HS diploma	-15	-14	-27
	HS diploma	-8	-20	-26
	Some college and above	10	-30	-23
<b>Gender</b>				
	Female	-20	-18	-34
	Male	-7	-18	-24

**TABLE 1.42. PERCENTAGE CHANGES IN NATIONAL GUARD APPLICANTS  
IN 2004 RELATIVE TO 2003**

Group		Compared with previous year		Compared with 2002
		2003	2004	2004
<b>AFQT</b>				
	>65	-9	-20	-27
	50-64	-11	-12	-22
	30-49	-16	-6	-21
	<30	5	6	11
<b>Age</b>				
	17-20 yr	-15	-6	-20
	21-25 yr	-14	-21	-32
	26+ yr	127	-31	57
<b>Education</b>				
	Less than HS diploma	-14	4	-11
	HS diploma	5	-23	-19
	Some college and above	47	-32	0
<b>Gender</b>				
	Female	-11	-11	-21
	Male	1	-15	-14

**TABLE 1.43. PERCENTAGE CHANGES IN RESERVE APPLICANTS  
IN 2004 RELATIVE TO 2003**

Group	Compared with previous year		Compared with 2002
	2003	2004	2004
<b>AFQT</b>			
>65	8	-22	-16
50-64	0	-22	-22
30-49	-7	-24	-29
<30	13	-6	6
<b>Age</b>			
17-20 yr	-8	-21	-27
21-25 yr	-8	-17	-24
26+ yr	98	-23	53
<b>Education</b>			
Less than HS diploma	-8	-27	-33
HS diploma	12	-17	-7
Some college and above	23	-27	-10
<b>Gender</b>			
Female	-6	-27	-31
Male	9	-19	-12

Interpreting the results in Tables 1.41-1.43 is difficult because several demographic factors are strongly related to one another. For example, those in the youngest age group would be expected to have less education at the time of application. To help account for these interrelations, log-linear regression analysis was used to further examine the drop in applicants in 2004.

It was found that although reductions occurred across virtually all demographic groups, these reductions were not uniform. In particular, larger reductions were seen in female applicants for the Army, Navy, and Air Force. Considerable reductions in applicants from the youngest age group (age 17-20 years) were also seen in many service branch/component groups. Other strong reductions were seen by demographic group, although these reductions were less uniform across services and components.

### ***Discussion***

A decline in applications for enlisted military service in the current atmosphere of extended deployments in hostile territories is not surprising. That these declines have been more pronounced among certain demographic groups is also not surprising, particularly the youngest age group. The patterns observed in this study can be more thoroughly examined once data for 2005 are available.

Note that applicants are not always individuals who appear solely on their own initiative. The services maintain large and active recruiting commands that seek qualified and eager individuals to serve. Accordingly, changes observed in applicant numbers and demographics could be a partial result of changing needs of the services or of changes in recruiting targets and techniques.



# **The Trend in Military Hospitalizations from 1999 to 2003**

## ***Introduction***

The increase in deployments of military personnel in the past few years to conflict zones in Afghanistan and Iraq could reasonably be expected to result in increased U.S. military medical care utilization. To document this result, the current study examines hospitalizations among military personnel in military medical treatment facilities (MTF) over the past 5 years. Changes in numbers of hospitalizations and in the distribution by medical condition are documented and analyzed.

## ***Data and Methods***

Hospital admission records at all military MTFs of personnel from all components of the Army, Navy, Marines, and Air Force occurring during 1999–2004 were included. Numbers of hospitalization records are summarized by year, service branch and component, and medical nature of the cause for hospitalization. All tabulations are by calendar years.

## ***Results***

Table 1.44 shows overall hospitalization counts and percentages during 1999–2003 by service and branch. The numbers of hospital admissions have clearly increased among Army and Marine personnel during 2002 and 2003 compared with 1999–2001. For example, among active duty Army personnel, there were 30,121 hospitalizations during 2001 and 33,504 during 2003, increases of 19.6% and 33.1%, respectively. Among active duty Marines, the analogous increases were 7.0% and 5.9% for 2002 and 2003, respectively.

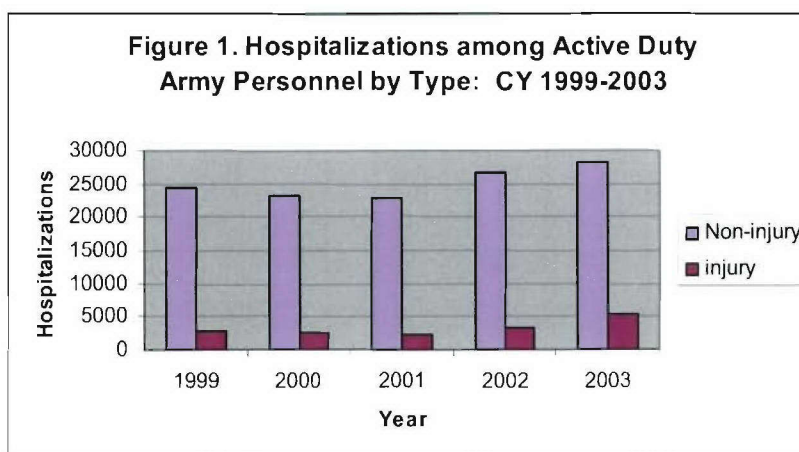
The percentage of all military hospitalizations accounted for by active duty Army personnel increased from 44.4% in 2001 to over 51% in 2003. For active duty Navy and Air Force personnel, the percentages dropped accordingly.

Hospitalizations also increased among Army and Marine reservists and among members of the Army National Guard. Although the percentages of increased hospitalizations among these components were even larger, such a comparison is complicated by the fact that members of these components were generally not activated during 1999–2001 and thus were mostly ineligible for hospitalization at a military MTF during that time.

**TABLE 1.44. HOSPITALIZATIONS IN 1999–2004 BY SERVICE AND BRANCHES**

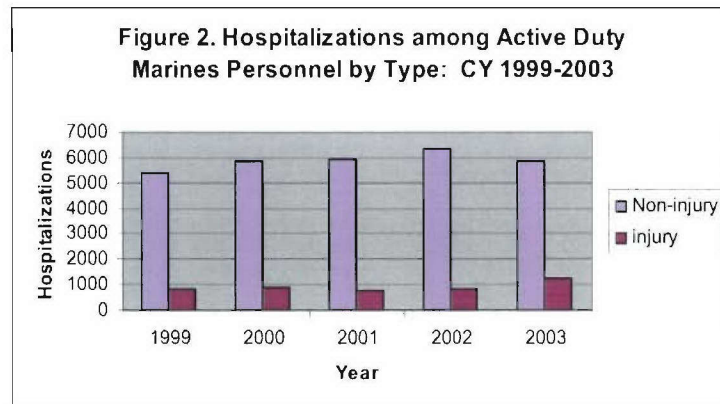
Year of hospitalization	Army		Navy		Marines		Air Force	
	Count	%	Count	%	Count	%	Count	%
<b>Active duty</b>								
1999	27,125	47.3	13,484	23.5	6,217	10.8	10,528	18.4
2000	25,737	42.9	15,013	25.0	6,759	11.3	12,460	20.8
2001	25,177	44.4	14,431	25.4	6,712	11.8	10,417	18.4
2002	30,121	48.0	14,589	23.2	7,180	11.4	10,871	17.3
2003	33,504	51.2	14,510	22.2	7,109	10.9	10,372	15.8
<b>Reserves</b>								
1999	674	68.3	188	19.0	52	5.3	73	7.4
2000	637	67.4	155	16.4	59	6.2	94	9.9
2001	581	63.5	174	19.0	66	7.2	94	10.3
2002	850	59.3	280	19.5	98	6.8	205	14.3
2003	2,766	76.6	320	89	271	75	254	7.0
<b>National Guard</b>								
1999	783	89.5					92	10.5
2000	607	84.3					113	15.7
2001	651	86.3					103	13.7
2002	1,111	86.5					173	13.5
2003	2,526	91.7					230	8.3

Figure 1.2 shows hospitalizations among active duty Army personnel for injury and non-injury causes. Hospitalizations for both types have clearly increased in the past 2 years, although the percentage increase for injury is greater: 125% from 2001 to 2003. The analogous results for active duty Marines (Fig. 1.3) are similar, although the increase in injury hospitalizations is not so steep as that among Army personnel. The number of noninjury hospitalizations is actually lower in 2003 than in 2001 or 2002, although the increase in injury hospitalizations makes the total number highest in 2003.



**FIGURE 1.2. HOSPITALIZATIONS AMONG ACTIVE DUTY ARMY PERSONNEL BY TYPE: 1999–2003**





**FIGURE 1.3. HOSPITALIZATIONS AMONG ACTIVE DUTY MARINES BY TYPE: 1999–2003.**

Table 1.45 shows distributions of injury hospitalizations among Marine and Army personnel during 1999–2003. The distribution changed little by gender or age.

**TABLE 1.45. DISTRIBUTION OF INJURY HOSPITALIZATIONS BY GENDER AND AGE: MARINES AND ARMY**

Service	Factor	1999		2000		2001		2002		2003	
		Count	%	Count	%	Count	%	Count	%	Count	%
GENDER											
Marines AD	Female	16	2.0	32	3.7	26	3.3	36	4.3	33	2.6
	Male	789	98.0	841	96.3	760	96.7	802	95.7	1,216	97.4
Army AD	Female	238	8.4	212	8.3	183	7.6	276	8.1	393	7.3
	Male	2,584	91.6	2,345	91.7	2,213	92.4	3,128	91.9	5,000	92.7
Guard	Female	15	16.9	13	23.2	9	11.0	12	8.2	43	10.8
	Male	74	83.1	43	76.8	73	89.0	134	91.8	354	88.9
Reserves	Female	22	31.0	13	25.0	14	21.5	13	16.9	52	12.7
	Male	49	69.0	39	75.0	51	78.5	64	83.1	356	87.3
AGE											
Marines AD	17–20 yr	277	34.4	307	35.2	233	29.6	280	33.4	406	32.5
	21–25 yr	359	44.6	386	44.2	372	47.3	374	44.6	563	45.1
	26–30 yr	98	12.2	86	9.9	89	11.3	97	11.6	158	12.7
	>30 yr	71	8.8	94	10.8	92	11.7	88	10.5	122	9.8
Army AD	17–20 yr	530	18.8	565	22.1	513	21.4	662	19.4	944	17.5
	21–25 yr	1,042	36.9	889	34.8	865	36.1	1,262	37.1	2,111	39.1
	26–30 yr	591	20.9	487	19.0	442	18.4	622	18.3	969	18.0
	>30 yr	659	23.4	616	24.1	576	24.0	858	25.2	1,372	25.4
Guard	17–20	23	25.8	14	25.0	23	28.0	39	26.7	54	13.6
	21–25 yr	16	18.0	8	14.3	18	22.0	30	20.5	89	22.4
	26–30 yr	10	11.2	8	14.3	9	11.0	16	11.0	50	12.6
	>30 yr	40	44.9	26	46.4	32	39.0	61	41.8	205	51.5
Reserves	17–20 yr	23	32.4	12	23.1	17	26.2	11	14.3	48	11.8
	21–25 yr	13	18.3	17	32.7	8	12.3	9	11.7	114	27.9
	26–30 yr	8	11.3	3	5.8	10	15.4	19	24.7	76	18.6
	>30 yr	27	38.0	20	38.5	30	46.2	38	49.4	170	41.7

## ***Discussion***

This study begins to document an upward trend in medical care usage that is expected with increased involvement of military forces in hostile areas. Injury hospitalizations increased dramatically in 2002 and 2003 among the Army and Marines, the services that are most directly involved in ground operations in Iraq and Afghanistan. Further study might be expanded to include examination of outpatient medical usage data. Other conditions potentially caused or exacerbated by deployment (e.g., mental health disturbances) also merit study.

This study has two limitations. First, it is unclear how the likelihood of hospitalization for various conditions is affected by the location of occurrence. For example, an injury that might lead to hospitalization at a domestic location might not be feasibly referred for hospitalization in a combat zone. Second, all hospitalization records, including possible multiple hospitalizations per individual, are included. This inclusion could result in an overcounting of individuals who are transferred from one MTF to another for the same condition, which could affect both the total numbers of hospitalizations and the distribution by medical type and demographic factors.



## **2. DESCRIPTIVE STATISTICS FOR APPLICANTS AND ACCESSIONS FOR ENLISTED SERVICE**

The populations of applicants are described for enlisted service in the active duty, reserve, and National Guard components of the U.S. military during 1998–2003. For the active duty applicants, subsequent accessions are also shown.

Except where otherwise noted, the following conventions apply:

- All references to year refer to calendar year.
- All merging of data sets to derive percentages and rates was performed at an individual level by SSN. For example, in determining the percentage of individuals gained in 2001 who received a discharge, only discharges with SSN matching a 2001 accession record SSN were included.
- Reference to “all applicants” refers to those who had a physical examination at MEPS. Applicants who were dropped from consideration before the medical exam (e.g., those who failed the AFQT) are not included.
- Totals may vary slightly among tables depending on the variable by which percentages or rates are presented. Records with a missing variable relevant to a given table are not included in that table.
- Education level and age at the time of MEPS application are used under “Active Duty Applicants at MEPS with Accession Records” and “Waivers” because MEPS data are the only source of this information for activities before accessions. For “EPTS Discharges,” “Disability Discharges among Army and Air Force Active Duty Enlistees,” and “Hospitalizations,” education level and age at time of accession are used.
- Temporary medical disqualifications are for conditions that can be remedied, such as being overweight or recently using marijuana. Permanent medical disqualifications are for all other disqualifying conditions described in DoD Instruction 6130.4.

## **Active Duty Applicants at MEPS with Accession Records**

Tables 2.1–2.8 describe the population of applicants and subsequent accessions for active duty enlisted service in the Army, Navy, Marines, and Air Force.

Table 2.1 shows the numbers of applicants and subsequent accession percentages for the aggregate 1998–2002 period and separately for 2003. Accession percentages for the 1998–2002 applicants are shown in two ways: 1) total accession and 2) accession within year of application. For example, the first row shows that 66.6% of Army applicants during 1998–2002 had a subsequent accession record, whereas only 42.2% of these applicants were accessed within the same year in which they applied for service. The second percentage is presented to make a fair basis of comparison for the 2003 accessions; at the time this report was prepared, accession data were unavailable beyond the end of 2003.

Except for the Navy, applications in 2003 are fairly consistent with those of the previous 5 years, because the 2003 applications are roughly one-fifth those of the previous 5 years combined. The applications to the Navy in 2003 are somewhat lower than expected based on the 1998–2002 applications. In fact, the applications in both 2002 and 2003 are lower than those in 2000. For a more detailed review of this circumstance, see “Reductions in Military Applicants in 2004” in Section 1.

Within-year accession rates in 2003 are lower than the rates seen over 1998–2002 for each service. This is especially so for the two larger branches, the Army and the Navy.

**TABLE 2.1. ACCESSIONS FOR ACTIVE DUTY ENLISTED APPLICANTS AT MEPS  
WHO RECEIVED A MEDICAL EXAMINATION BY IN 1998–2002 VS 2003: SERVICE**

Service	All applicants in 1998–2002			Applicants in 2003	
	Count	Accession rate	Accession rate within year	Count	Accession rate within year
Army	449,943	66.6	42.2	92,755	28.3
Navy	314,320	70.3	43.1	54,782	28.0
Marines	214,898	69.2	35.8	43,373	30.4
Air Force	206,958	77.1	46.3	43,537	40.6
Total	1,186,119			234,447	

Table 2.2 shows the numbers of applicants for enlisted service by year for 1998–2003 and the numbers of these applicants who subsequently began active duty enlisted service within 1 and 2 years of application. Regulations state that accessions are to occur within 2 years of application.

Accession percentages are low for applicants in 2003 owing to the lack of full follow-up data; accession data were only available through 2003. Aside from this caveat, it appears that approximately two-thirds of applicants are gained onto active duty within 1 year of applying, with only a small percentage being gained more than 1 year after application.



**TABLE 2.2. ACCESSIONS WITHIN 1 AND 2 YEARS OF APPLICATION FOR ACTIVE DUTY ENLISTED APPLICANTS AT MEPS WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2003**

Year of exam	Applicants	No. within 1 yr of application	% within 1 yr of application	No. within 2 yr of application	% within 2 yr of application
1998	206,298	131,094	63.5	141,337	68.5
1999	229,994	153,020	66.5	162,425	70.6
2000	240,296	162,039	67.4	169,643	70.6
2001	249,608	166,404	66.7	174,540	69.9
2002	259,923	166,687	64.1	172,714	66.4
2003	234,447	72,392	30.9	N/A	N/A

Tables 2.3–2.6 show demographic characteristics at the time of application for the applicant pools of 1998–2002 and separately for 2003. Accession percentages are also shown.

Most 2003 applicants were male (about 82%), white (about 69%), and aged 17–20 years (about 72%). Just under 36% had not completed high school at the time of application.

Demographic distributions of accessions reflect the applicant population with regard to gender, age, race, and AFQT score. Slight differences may be seen between applicants and accessions in 2003, although these differences are likely attributable to lack of follow-up data and to random fluctuations that occur within any given year.

The percentage of accessions that had at least a high school education at the time of application was higher than that among applicants. This difference likely reflects the fact that many applicants with less than a high school education at the time of application were still in school by the end of the year and thus had not begun service.

**TABLE 2.3. ACCESSIONS FOR ACTIVE DUTY ENLISTED APPLICANTS AT MEPS WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 VS 2003: GENDER**

Gender	1998–2002				2003			
	Applicants		Accessions		Applicants		Accessions	
	Count	%	Count	%	Count	%	Count	%
Male	946,266	79.8	677,644	81.8	192,572	82.1	60,663	83.9
Female	239,844	20.2	151,249	18.2	41,873	17.9	11,679	16.1

**TABLE 2.4. ACCESSIONS FOR ACTIVE DUTY ENLISTED APPLICANTS AT MEPS WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 VS 2003: AGE**

Age	1998–2002				2003			
	Applicants		Accessions		Applicants		Accessions	
	Count	%	Count	%	Count	%	Count	%
17–20 yr	910,538	76.8	645,913	78.0	168,986	72.1	51,182	70.8
21–25 yr	215,111	18.1	147,521	17.8	47,621	20.3	16,684	23.1
26–30 yr	46,847	4.0	28,070	3.4	12,009	5.1	3,396	4.7
>30 yr	13,076	1.1	6,944	0.8	5,764	2.5	1,070	1.5
Missing	547	—	448	—	67	—	10	—

**TABLE 2.5. ACCESSIONS FOR ACTIVE DUTY ENLISTED APPLICANTS AT MEPS  
WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 VS 2003: RACE**

Race	1998–2002				2003			
	Applicants		Accessions		Applicants		Accessions	
	Count	%	Count	%	Count	%	Count	%
White	844,403	71.2	590,849	71.3	161,867	72.8	49,759	71.5
Black	221,257	18.7	152,030	18.3	37,263	16.8	12,249	17.6
Other	120,238	10.1	85,873	10.4	23,315	10.5	7,624	10.9
Unknown	221	—	144	—	12,002	—	2,710	—

**TABLE 2.6. ACCESSIONS FOR ACTIVE DUTY ENLISTED APPLICANTS AT MEPS  
WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 VS 2003: EDUCATION LEVEL**

Education level at MEPS	1998–2002				2003			
	Applicants		Accessions		Applicants		Accessions	
	Count	%	Count	%	Count	%	Count	%
Below HS senior	39,125	3.3	23,996	2.9	6,653	2.8	1,533	2.1
HS senior	366,798	31.0	236,285	28.6	77,271	33.1	18,671	25.9
HS diploma	740,725	62.6	542,690	65.7	139,476	59.7	49,027	68.0
Some college	10,599	0.9	7,645	0.9	2,714	1.2	897	1.2
Bachelor's and above	25,867	2.2	15,924	1.9	7,562	3.2	1,940	2.7
Unknown	3,005	—	2,356	—	771	—	274	—

The distribution of AFQT scores was similar between applicants and accessions in both 1998–2002 and 2003 (Table 2.7). This similarity likely reflects the fact that individuals achieving a low score on the AFQT are often eliminated from consideration before being given a medical exam. Accordingly, such individuals do not appear among the applicant data. In addition, note that the AFQT is a nationally normed test, so the score distribution among all applicants would not necessarily mirror the percentile ranges.

**TABLE 2.7. ACCESSIONS FOR ACTIVE DUTY ENLISTED APPLICANTS AT MEPS  
WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 VS 2003: AFQT SCORES**

AFQT score	1998–2002				2003			
	Applicants		Accessions		Applicants		Accessions	
	Count	%	Count	%	Count	%	Count	%
93–99	49,477	4.2	35,766	4.3	14,388	6.2	4,561	6.3
65–92	390,519	33.1	283,914	34.3	87,199	37.5	28,059	38.8
50–64	322,691	27.3	230,955	27.9	60,722	26.1	18,989	26.3
30–49	378,548	32.1	261,615	31.6	58,853	25.3	17,474	24.2
1–29	39,469	3.3	15,271	1.8	11,621	5.0	3,204	4.4
Missing	5,415	—	1,375	—	1,664	—	55	—



Table 2.8 shows the medical qualification status of applicants during 1998–2002 and 2003. Just over 80% of applicants in 2003 were deemed to be medically qualified for enlisted service. However, 90% of the subsequent accessions came from among those applicants with no detected medically disqualifying condition.

**TABLE 2.8. ACCESSIONS FOR ACTIVE DUTY ENLISTED APPLICANTS AT MEPS WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 VS 2003: MEDICAL QUALIFICATIONS**

Qualification status	1998–2002				2003			
	Applicants		Accessions		Applicants		Accessions	
	Count	%	Count	%	Count	%	Count	%
Qualified	932,230	78.6	716,242	86.4	188,891	80.6	65,268	90.2
Permanent	96,388	8.1	35,943	4.3	15,452	6.6	2,482	3.4
Temporary	157,501	13.3	76,711	9.3	30,104	12.8	4,592	6.3

In contrast, 6.6% of applicants in 2003 had a permanent medical disqualification, whereas only about 3.4% of subsequent accessions came from this group. A similar observation can be made for 1998–2002. The apparent lower accession rate among those with a permanent medical disqualification in part reflects inability or unwillingness of some medically disqualified applicants to acquire the necessary accession medical waiver. Some applicants do not pursue a medical waiver, and those who do might not be granted a waiver. Accession medical waiver numbers and approval rates and the medical nature of conditions considered for waiver are presented under “Waivers.”

Finally, it is apparent that individuals with a temporary medical disqualification represent a smaller percentage of accessions than of applicants. This may reflect an inability or unwillingness of some applicants to remedy the condition that led to a temporary disqualification.

## Reserve Applicants at MEPS without Accession Records

Tables 2.9–2.15 show the numbers of applicants for the enlisted reserves of the Army, Navy, Marines, and Air Force by demographic features. In particular, reserve applicants who received a medical examination at any MEPS in 1998–2002 (aggregate) and 2003 are represented. Although these individuals were primarily civilians, many accessions into the reserves are direct accessions from active duty and thus would not be included in the results.

Table 2.9 shows the number of applicants, by year, to the reserves. The year-to-year numbers of applicants for each service vary somewhat, although this variation shows no clear pattern within a given service or across services.

**TABLE 2.9. RESERVE APPLICANTS AT MEPS  
WHO RECEIVED A MEDICAL EXAMINATION IN 1997–2002: SERVICE AND YEAR**

Year	Army	Navy	Marines	Air Force
1998	19,317	3,555	7,242	1,564
1999	21,707	2,212	7,206	2,042
2000	27,033	2,137	7,857	2,578
2001	23,083	1,845	7,507	3,121
2002	23,738	1,815	6,007	3,651
2003	25,019	2,092	5,516	4,185
Total	139,897	13,656	41,335	17,141

From Tables 2.10–2.13 it is seen that most reserve applicants in 2003 were male (75.0%), aged 17–20 years (62.7%), and white (71.1%). Sixty-five percent had at least a high school diploma at the time of application, whereas most of the remaining 35% were seniors in high school. The distribution by age group in 2003 was different from that during 1998–2002, with the oldest age group accounting for a greater percentage than expected and the youngest group accounting for less than expected. The distribution by gender in 2003 was slightly different from that during 1998–2002, with the male group accounting for a little higher percentage of applicants than expected. According to the other demographic factors, the distributions of reserve applicants during 1998–2002 were similar to those among 2003 applicants.

**TABLE 2.10. RESERVE APPLICANTS AT MEPS  
WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 vs 2003: GENDER**

Gender	1998–2002 Applicants	%	2003 Applicants	%
Male	127,465	72.7	27,620	75.0
Female	47,751	27.3	9,192	25.0



**TABLE 2.11. RESERVE APPLICANTS AT MEPS  
WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 VS 2003: AGE**

Age	1998–2002		2003	
	Count	%	Count	%
17–20 yr	128,370	73.3	23,092	62.7
21–25 yr	28,077	16.0	5,659	15.4
26–30 yr	11,309	6.5	2,809	7.6
>30 yr	7,325	4.2	5,230	14.2
Missing	136	—	22	—

**TABLE 2.12. RESERVE APPLICANTS AT MEPS  
WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 VS 2003: RACE**

Race	1998–2002		2003	
	Count	%	Count	%
White	119,718	68.3	24,447	71.1
Black	37,341	21.3	6,592	19.2
Other	18,118	10.3	3,366	9.8
Unknown	40	—	2,407	—

**TABLE 2.13. RESERVE APPLICANTS AT MEPS  
WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 VS 2003: EDUCATION LEVEL**

Education level at examination	1998–2002		2003	
	Count	%	Count	%
Below HS senior*	23,206	13.3	4,187	11.4
HS senior	46,368	26.5	8,669	23.6
HS diploma	96,328	55.0	21,068	57.3
Some college	2,144	1.2	716	1.9
Bachelor's and above	7,023	4.0	2,128	5.8
Unknown	148	—	44	—

\* Encompasses the following: 1) those pursuing completion of the GED or other test-based high school equivalency diploma, vocational school, or secondary school, etc.; 2) those not attending high school and who are neither a high school graduate nor an alternative high school credential holder; and 3) those attending high school and not yet seniors.

Table 2.14 shows the distribution of AFQT scores among applicants for enlisted service in the reserves. It is seen that roughly 88% of the applicants in 2003 scored in the 30–92 percentile range. Note that this is a nationally normed test, and some applicants who performed poorly may have had their applications terminated before receiving a medical examination. Therefore, the percentage distributions do not necessarily match the percentile ranges. For example, only 4.8% of the 2003 applicants scored in the 1–29 percentile range.

**TABLE 2.14. RESERVE APPLICANTS AT MEPS  
WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 vs 2003: AFQT SCORE**

AFQT score	1998–2002 Applicants	%	2003 Applicants	%
93–99	10,661	6.2	2,868	8.0
65–92	62,273	36.0	14,039	39.4
50–64	43,848	25.3	8,521	23.9
30–49	50,915	29.4	8,512	23.9
1–29	5,515	3.2	1,699	4.8
Missing	2,005	—	1,173	—

Table 2.15 shows the numbers and percentages of reserve applicants by medical qualification status. It is seen that over 78% of applicants were deemed to be medically qualified for service. Among those not initially qualified, most disqualifications were temporary, i.e., for conditions that can be remedied, such as being overweight.

**TABLE 2.15. RESERVE APPLICANTS AT MEPS WHO RECEIVED A MEDICAL EXAMINATION  
IN 1998–2002 vs 2003: MEDICAL QUALIFICATIONS**

Disqualification status	1998–2002		2003	
	Count	%	Count	%
Qualified	138,915	79.3	28,850	78.4
Permanent	14,268	8.1	2,894	7.9
Temporary	22,034	12.6	5,068	13.8

## **Army and Air National Guard Applicants at MEPS without Accession Records**

Tables 2.16–2.22 show the numbers of new applicants in the enlisted National Guard of the Army and Air Force by demographic and other factors. The Navy and Marines do not have a guard component. The tables represent National Guard applicants who received a medical examination at a MEPS in 1998–2002 (aggregate) or 2003. Although these individuals were primarily civilians, many accessions into the National Guard are direct accessions from active duty and thus would not be included in the results.

Table 2.16 shows the number of applicants, by year and service, to the National Guard. The numbers of applicants to the Air National Guard were considerably lower during 1998–1999 than during 2000–2003. AMSARA cannot determine whether this abrupt change in numbers reflects true applicant numbers or shortcomings in the data. The numbers of applicants for the Army National Guard remained relatively stable over this period.

**TABLE 2.16. ARMY AND AIR NATIONAL GUARD APPLICANTS AT MEPS  
WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2003: SERVICE**

Year	Army National Guard	Air National Guard
1998	29,492	2,876
1999	32,277	3,356
2000	37,400	5,028
2001	38,378	5,865
2002	36,927	5,266
2003	36,049	5,463
Total	210,523	27,854

From Tables 2.17–2.20 it is seen that most guard applicants in 2003 were male (78.3%), aged 17–20 years (63.7%), and white (72.9%). Approximately 63% had at least a high school diploma at the time of application, and most of the remaining applicants were in their senior year of high school at the time of application. The distribution by age group in 2003 was different from that during 1998–2002, with the oldest age group accounting for a greater percentage than expected and the youngest group accounting for a lower percentage. The distributions by gender and race in 2003 were slightly different from those during 1998–2002, with the male group or non-white group accounting for a little higher percentage than expected. According to the other demographic factors, the distributions of guard applicants during 1998–2002 were similar to those among 2003 applicants.

**TABLE 2.17. ARMY AND AIR NATIONAL GUARD APPLICANTS AT MEPS  
WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 VS 2003: GENDER**

Gender	1998–2002 Applicants	%	2003 Applicants	%
Male	150,677	76.5	32,519	78.3
Female	46,187	23.5	8,993	21.7



**TABLE 2.18. ARMY AND AIR NATIONAL GUARD APPLICANTS AT MEPS  
WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 VS 2003: AGE**

Age	1998–2002 Applicants	%	2003 Applicants	%
17–20 yr	145,242	73.8	26,441	63.7
21–25 yr	31,980	16.3	6,148	14.8
26–30 yr	11,981	6.1	3,195	7.7
>30 yr	7,500	3.8	5,713	13.8
Missing	162	—	15	—

**TABLE 2.19. ARMY AND AIR NATIONAL GUARD APPLICANTS AT MEPS  
WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 VS 2003: RACE**

Race	1998–2002		2003	
	Count	%	Count	%
White	152,937	77.7	28,545	72.9
Black	30,411	15.5	7,018	17.9
Other	13,477	6.8	3,588	9.2
Unknown	40	—	2,361	—

**TABLE 2.20. ARMY AND AIR NATIONAL GUARD APPLICANTS AT MEPS  
WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 VS 2003: EDUCATION LEVEL**

Education level at examination	1998–2002		2003	
	Count	%	Count	%
Below HS senior*	31,930	16.3	6,121	14.8
HS senior	50,406	25.7	9,182	22.2
HS diploma	105,995	54.0	23,370	56.5
Some college	2,479	1.3	777	1.9
Bachelor's and above	5,570	2.8	1,905	4.6
Unknown	485	—	157	—

\* Encompasses the following: 1) those pursuing completion of the GED or other test-based high school equivalency diploma, vocational school, or secondary school, etc.; 2) those not attending high school and who are neither a high school graduate nor an alternative high school credential holder; and 3) those attending high school and not yet seniors.

Table 2.21 shows the distribution of AFQT scores among applicants for enlisted service in the Army and Air National Guard. It is seen that roughly 86% of the applicants in 2003 scored in the 30–92 percentile range. Note that this is a nationally normed test, and some applicants who perform poorly may have had their applications terminated before receiving a medical exam. Therefore, the percentage distributions do not necessarily match the percentile ranges. For example, only 8.5% of the 2003 applicants scored in the 1–29 percentile range. This percentage was somewhat higher than the 4.9% seen among applicants during 1998–2002.

**TABLE 2.21. ARMY AND AIR NATIONAL GUARD APPLICANTS AT MEPS WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 VS 2003: AFQT SCORE**

AFQT score	1998–2002		2003	
	Count	%	Count	%
93–99	9,133	4.7	2,208	5.9
65–92	61,897	32.0	12,449	33.2
50–64	43,128	22.3	8,225	21.9
30–49	69,630	36.0	11,401	30.4
1–29	9,425	4.9	3,199	8.5
Missing	3,652	—	4,030	—

Table 2.22 shows the numbers and percentages of Army and Air National Guard applicants by medical qualification status. It is seen that roughly 75% of 2003 applicants were deemed to be medically qualified for service. Among those not immediately qualified, most disqualifications were temporary, i.e., for conditions that can be remedied, such as being overweight.

**TABLE 2.22. NATIONAL GUARD APPLICANTS AT MEPS WHO RECEIVED A MEDICAL EXAMINATION IN 1998–2002 VS 2003: MEDICAL QUALIFICATIONS**

Disqualification status	1998–2002		2003	
	Count	%	Count	%
Qualified	148,252	75.3	31,176	75.1
Permanent	17,109	8.7	3,318	8.0
Temporary	31,504	16.0	7,018	16.9

## **Medical Disqualifications among Applicants for First-Time Active Duty Enlisted Service**

Table 2.23 shows the numbers of medical disqualifications among applicants for all services during 1998–2002 excluding 2001 and 2003, separately, categorized by the MEPCOM medical failure codes (see “MEPS” in Section 4). The 2001 data were not included in this analysis because the coding of medical disqualifications was changed during 2001, and for many disqualifications it was unclear which coding was being used. The first set of columns shows the numbers of disqualifications according to the first code listed for each individual. The second set of columns shows all disqualification codes among these applicants, including multiple disqualifications per individual where applicable.

The most common reason for disqualification was failure to meet body weight standards, with 18,054 individuals receiving a disqualification for this reason in 2003. This is generally a temporary disqualification that can be eliminated by either gaining or losing weight, as needed. The next most common disqualification, which is also generally temporary, was for use of *Cannabis sativa* (marijuana). This disqualification was less common in 2003 than in 1998–2000 and 2002; it represented about 10% of all disqualifications in 2003 compared with about 14% in the earlier years. The third and the fourth most common overall, and the most common of the permanent disqualifications, were for lungs/chest, a category that includes history of asthma, and for psychological conditions.



**TABLE 2.23. DISQUALIFICATIONS OF APPLICANTS BY MEPCOM MEDICAL FAILURE CODES: 1998–2000\* vs 2002–2003**

Category	First listed failure				All failures			
	1998–2000 and 2002		2003		1998–2000 and 2002		2003	
	Count	%	Count	%	Count	%	Count	%
Weight	65,818	23.0	17,159	25.1	71,282	22.0	18,054	24.2
<i>Cannabis sativa</i>	41,596	14.5	7,249	10.6	43,484	13.4	7,523	10.1
Psychological and psychomotor	13,208	4.6	4,329	6.3	15,721	4.9	4,638	6.2
Lungs/chest	18,480	6.5	3,997	5.8	21,200	6.5	4,603	6.2
Lower extremities	16,182	5.7	3,907	5.7	19,112	5.9	4,354	5.8
Audiometer	17,515	6.1	3,877	5.7	19,849	6.1	4,046	5.4
Upper extremities	8,887	3.1	2,689	3.9	10,374	3.2	3,000	4.0
Skin/lymphatics	11,343	4.0	2,476	3.6	13,088	4.0	2,769	3.7
Refraction	8,301	2.9	2,397	3.5	9,518	2.9	2,526	3.4
Blood pressure	6,612	2.3	2,222	3.2	7,636	2.4	2,532	3.4
Feet	9,286	3.2	1,733	2.5	10,876	3.4	1,897	2.5
Abdomen/viscera	6,022	2.1	1,603	2.3	6,883	2.1	1,818	2.4
Genitourinary system	6,636	2.3	1,409	2.1	7,729	2.4	1,550	2.1
Cocaine	4,843	1.7	1,195	1.7	4,916	1.5	1,249	1.7
Eye, general	2,871	1.0	1,133	1.7	3,359	1.0	1,251	1.7
Urinalysis	2,227	0.8	1,120	1.6	2,534	0.8	1,168	1.6
Spine/other musculature	4,926	1.7	1,112	1.6	5,953	1.8	1,291	1.7
Neurologic	4,569	1.6	914	1.3	5,775	1.8	1,121	1.5
Heart	3,023	1.1	829	1.2	3,480	1.1	917	1.2
Pelvic (female)	2,821	1.0	717	1.0	3,315	1.0	799	1.1
All others	30,899	10.8	6,356	9.3	37,808	11.7	7,576	10.1
<b>Total</b>	<b>286,065</b>		<b>68,423</b>		<b>323,892</b>		<b>74,682</b>	

\* MEPCOM medical disqualification codes were changed in 2001, and both old and new codes were used without distinction in the 2001 data. Hence, the 2001 data were excluded.

Within the past few years, MEPCOM has begun to assign ICD9 diagnostic codes to more accurately indicate the reasons for medical disqualifications among applicants. This initiative is in its early stages, because the process of standardizing usage of these complex codes by officials at 65 geographically separate sites presents a considerable logistical challenge. Accordingly, AMSARA simply presents the codes that were used for applicants during 2002 and 2003, without comparisons with the traditional medical failure codes summarized above. Note that although some categories are similar to those in Table 2.23, they are generally not identical and can only be compared in terms of rough numbers.

Table 2.24 shows the numbers of individuals with medical disqualifications among applicants for all services in 2002 and 2003 categorized by groupings of ICD9 codes. Being overweight is the leading cause of medical disqualification, with 17,226 individuals being disqualified in 2002 and 15,459 in 2003. Drug abuse is second with 10,552 disqualifications in 2002 and 10,033 in 2003. Hearing deficiency and asthma, both permanent disqualifications, were the third and fourth leading causes, respectively, in both years.

**TABLE 2.24. MEDICAL DISQUALIFICATIONS OF APPLICANTS BY ICD9 CODES: 2002 AND 2003\***

Condition	2002		2003	
	Count	%	Count	%
Overweight†	17,226	23.3	15,459	22.6
<i>Cannabis sativa</i> §	8,993	12.2	7,349	10.7
Cocaine	1,281	1.7	1,205	1.8
Other drug	408	0.6	399	0.6
Hearing deficiency	3,981	5.4	3,723	5.4
Asthma	3,723	5.0	3,179	4.6
Refraction‡	2,805	3.8	2,650	3.9
Underweight	1,771	2.4	2,028	3.0
Hypertension	1,521	2.1	1,550	2.3
Disorder of bone/cartilage	1,232	1.7	1,485	2.2
Hyperkinetic syndrome	1,106	1.5	1,207	1.8
Neurosis	1,098	1.5	986	1.4
Pregnancy	961	1.3	831	1.2
Cardiovascular symptom	703	1.0	751	1.1
Inguinal hernia	591	0.8	542	0.8
Depressive disorder	365	0.5	358	0.5
Nonspecific abnormal findings	330	0.4	518	0.8
Eye surgery	256	0.3	367	0.5
Visual disturbances	130	0.2	154	0.2
Blind/low vision	56	0.1	30	0.0
All others	25,406	34.4	23,632	34.5

\* 2002 was the first year for which ICD9 codes were provided.

† Includes MEPCOM code OVR, ICD9 278 (obesity), and 783 (abnormal weight gain).

§ Includes 305.2 (cannabis abuse), 305.6 (cocaine abuse), and 305 and 306 (all other drug abuse).

‡ Includes refractive disorders (367), refractive surgery (P11.6, 11.7), visual disturbances (368), and low vision (369).

Table 2.25 shows the numbers of all disqualification codes among applicants in 2002 and 2003 categorized by groupings of ICD9 codes. The distributions of disqualifications by medical condition were similar in 2002 and 2003. The total number of medical disqualifications was less in 2003 than in 2002, although it has been shown (see Section 1) that the total number of applicants was decreasing in 2003.

**TABLE 2.25. MEDICAL DISQUALIFICATIONS: 2002 AND 2003\***

ICD9 code	2002		2003	
	Count	%	Count	%
Overweight†	18,096	22.7	16,309	21.8
<i>Cannabis sativa</i> §	9,386	11.8	7,649	10.2
Disorder of bone/cartilage	1,338	1.7	1,701	2.3
Other drug	537	0.7	498	0.7
Hearing deficiency	4,385	5.5	3,712	5.0
Asthma	4,140	5.2	3,900	5.2
Refraction‡	2,945	3.7	2,804	3.7
Underweight	1,872	2.3	2,153	2.9
Hypertension	1,745	2.2	1,802	2.4
Neurosis	1,277	1.6	1,187	1.6
Hyperkinetic syndrome	1,215	1.5	1,375	1.8
Pregnancy	1,000	1.3	870	1.2
Cardiovascular symptom	841	1.1	917	1.2
Inguinal hernia	643	0.8	599	0.8
Depressive disorder	446	0.6	458	0.6
Nonspecific abnormal findings	367	0.5	592	0.8
Eye surgery	279	0.3	408	0.5
Visual disturbances	145	0.2	181	0.2
Blind/low vision	57	0.1	30	0.0
All others	27,842	34.9	26,393	35.3

\* Multiple disqualifications per applicants are included.

† Includes MEPCOM code OVR, ICD9 278 (obesity), and 783 (abnormal weight gain).

§ Includes 305.2 (cannabis abuse), 305.6 (cocaine abuse), and 305 and 306 (all other drug abuse).

‡ Includes refractive disorders (367), refractive surgery (P11.6, 11.7), visual disturbances (368), and low vision (369).



## Waivers

Applicants who receive a permanent medical disqualification at the MEPS may be granted an accession medical waiver for the disqualifying condition(s) from a service-specific waiver authority. This section summarizes the numbers of waiver considerations during 1998–2003. Part I examines all waiver consideration records, regardless of whether a corresponding MEPS record was available. Part II examines only those waiver records for which there is a matching applicant record in the MEPS data. The counts of waiver records in part I will therefore differ from those in part II.

Individuals frequently have multiple records of waiver consideration by the same waiver authority, likely reflecting resubmissions, perhaps with additional information. Only the most current record on each individual was considered in these analyses. Therefore the numbers of considerations do not reflect overall workload of the waiver authorities.

Note that a waiver application that is denied by one waiver authority might be submitted to another. In such a case, the individual would be counted twice in the tables. Finally, note that only waiver applications are summarized in this section, so these individuals may eventually gain or have been gained into duty.

### ***Part I: Without Accession***

Accession medical waiver considerations for active duty enlisted applicants in 1998–2003 are summarized for the Army, Marines, and Air Force. Data were unavailable for the Navy for most of 2003, so the number of waivers shown is low. All waiver considerations are included, regardless of whether AMSARA has a corresponding MEPS record or whether the individual was subsequently gained onto active duty.

Table 2.26 shows raw counts (i.e., no matching of records to applicant or accession data) of waiver considerations and approval percentages in each year from 1998 to 2003 by service and year of waiver decision. The approval percentages are derived by dividing number of approvals by total number of considerations for a particular waiver authority in a calendar year. Note that a waiver can be denied by one service authority and granted by another, so an individual could be counted more than once.

Over this period the number of Army waiver consideration records has generally increased to more than 15,000 in 2002 and 2003. The numbers for the Navy show no clear upward or downward trend. For the Marines, the numbers are quite stable. The numbers of considerations for the Air Force increased somewhat over the period, from a low of 1,732 considerations in 1998 to a high of 3,732 in 2003.

Approval percentages for the Army peaked at 66.8% in 2000 and have been at about 60% in 2001–2003. Waiver approval rates have generally decreased over time for the Navy and Marines, with respective approval rates of 65.5% and 65.4% in 1998 to 45.2% and 45.5% in 2002. For the Air Force, approval rates increased dramatically to over 50% in 2001 and 2002 and to over 60% in 2003; Air Force rates were <40% before 2000.

Note that the numbers of considerations and approvals shown in Table 2.26 will be higher than in Tables 2.27–2.30, which show only those waiver considerations with an associated

medical diagnosis code. Some waiver records fail to indicate the medical condition for which the waiver is being considered and are therefore excluded from Tables 2.27–2.30.

**TABLE 2.26. WAIVER CONSIDERATIONS FOR ACTIVE DUTY ENLISTED APPLICANTS BY SERVICE AND YEAR\***

Year	Army		Navy		Marines		Air Force	
	Count	% Approved	Count	% Approved	Count	% Approved	Count	% Approved
1998	8,528	57.6	5,229	65.5	3,169	65.4	1,732	38.3
1999	9,900	58.2	6,574	52.8	3,821	63.5	1,884	34.0
2000	11,760	66.8	6,242	50.6	3,431	55.9	2,148	42.3
2001	11,464	60.5	5,329	44.2	3,138	43.9	2,378	58.2
2002	15,188	61.1	5,453	45.2	3,158	45.5	3,073	52.9
2003	15,003	59.5	NA	NA	3,358	62.9	3,732	61.6
Total	71,843		29,423		20,075		14,947	

\* Values are estimated using approved and denied only, without considering those still pending. Data on Navy waivers were unavailable in 2003.

Tables 2.27–2.30 show the conditions for which the most accession medical waivers were considered by each service’s waiver authority during 1998–2002 and the numbers of approvals for each condition over this period. Also shown are the analogous numbers of waiver considerations and approvals for those conditions in 2003.

The medical condition categories were created for the Army and Air Force data according to the first three digits of the ICD9 code(s) assigned to each waiver consideration. The Navy and Marines use the condensed ICD9 codes appearing in DoD Instruction 6130.3 (see “Waiver” in Section 4); the medical condition categories for these services are as defined in that document.

Table 2.27 shows enlisted accession waiver considerations and approvals by the Army. Hearing deficiency is the condition for which waivers were most often considered in 1998–2002, accounting for 6,220 (14.3% of all considerations). Hearing deficiency is also the most common condition for waiver considerations and approvals in 2003. Disorders of refraction is the second leading condition for waiver approvals in 1998–2002, and asthma is the third most common. Each accounted for just under 10% of considerations and approvals during 1998–2002 and 2003. All other conditions had considerably fewer approvals than these top three conditions.

The numbers of waiver considerations for several conditions in 2003 are dramatically different from what was expected based on the numbers over the 5 years from 1998 to 2002. For example, 382 considerations were for ADHD during 2003, more than half of the 737 considered during the entire 5-year period (an average of about 147 per year). Also, 571 considerations were for other nonspecific abnormal findings in 2003, among which 551 were granted. This is more than four times higher than the 131 such waivers considered during 1998–2002.

Some of these differences result from varying numbers of considerations, which in turn can result from changes in medical standards over time, and some may represent random fluctua-



tions or may be related to changes in personnel or philosophy within a waiver authority. However, such differences may be the result of data shortcomings. For example, only three considerations were labeled “physiological malfunction arising from mental factors” in 2003, compared with 1,197 during 1998–2002. This difference almost certainly reflects a change in the way such considerations were coded rather than a real drop of such a magnitude in the waiver requests for this category.

**TABLE 2.27. TOP ICD9 DIAGNOSES OF WAIVERS CONSIDERED AND GRANTED FOR ACTIVE DUTY ENLISTED APPLICANTS IN 1998–2002 VS 2003: ARMY\***

ICD9 code	Condition	1998–2002				2003			
		Applied		Granted		Applied		Granted	
		Count	%	Count	%	Count	%	Count	%
389	Hearing deficiency	6,220	14.3	4,667	14.1	1,606	10.8	877	9.9
367	Disorders of refraction and accommodation	4,319	9.9	3,478	10.5	1,263	8.5	870	9.8
493	Asthma	4,247	9.8	3,345	10.1	1,220	8.2	771	8.7
717	Internal derangement of knee	1,858	4.3	1,555	4.7	398	2.7	228	2.6
754	Certain congenital musculoskeletal deformities	1,707	3.9	1,458	4.4	262	1.8	144	1.6
306	Physiological malfunction arising from mental factors	1,197	2.8	1,193	3.6	3	0.0	2	0.0
401	Hypertension	1,039	2.4	734	2.2	187	1.3	67	0.8
314	ADHD	737	1.7	637	1.9	382	2.6	327	3.7
785	Symptoms involving cardiovascular system	704	1.6	612	1.9	215	1.4	187	2.1
693	Dermatitis due to substances taken internally	581	1.3	514	1.6	88	0.6	82	0.9
783	Symptoms concerning nutrition, metabolism, and development	555	1.3	469	1.4	230	1.5	184	2.1
719	Other and unspecified disorders of joint	518	1.2	338	1.0	255	1.7	116	1.3
300	Anxiety, dissociative, and somatoform disorders	505	1.2	261	0.8	380	2.5	137	1.5
117	Other mycoses	392	0.9	363	1.1	241	1.6	218	2.5
733	Other disorders of bone and cartilage	300	0.7	228	0.7	292	2.0	227	2.6
796	Other nonspecific abnormal findings	131	0.3	110	0.3	571	3.8	551	6.2
All others		18,492	42.5	13,077	39.6	7,332	49.1	3,898	43.9
Total		43,502		33,039		14,925		8,886	

\* Values represent applicants with a diagnostic code, not total waiver applicants.



Table 2.28 shows the conditions for which the most accession medical waivers were considered by the Navy waiver authority during 1998–2002. The corresponding numbers of waiver considerations and approvals for those conditions in 2003 are unavailable, because waiver data were mostly unavailable from the Navy (see “Waiver” in Section 4).

Hearing deficiency is the condition for which Navy waivers were most often considered in 1998–2002, closely followed by asthma and then disorders of refraction and accommodation. These three conditions were involved in 3,136 (11.2%), 3,110 (11.1%), and 2,662 (9.5%) Navy waiver considerations during that period, respectively. Disorders of refraction accounted for the largest number of waiver approvals (1,587, 10.8% of all approvals).

**TABLE 2.28. TOP DoD DIAGNOSES OF WAIVERS CONSIDERED AND GRANTED FOR ACTIVE DUTY ENLISTED APPLICANTS IN 1997–2002: NAVY**

DoD code	Definition	1998–2002*			
		Applied		Granted	
		Count	%	Count	%
389	Hearing deficiency	3,136	11.2	1386	9.5
493	Asthma	3,110	11.1	1178	8.1
367	Disorders of refraction and accommodation	2,662	9.5	1587	10.9
754	Certain congenital musculoskeletal deformities	1,402	5	1059	7.2
733	Other disorders of bone and cartilage	1,179	4.2	825	5.6
401	Hypertension	1,124	4	883	6
717	Internal derangement of knee	992	3.5	628	4.3
796	Miscellaneous conditions	961	3.4	505	3.5
300	Neurotic, mood, somatoform, dissociative, or factitious disorders	729	2.6	317	2.2
995	Certain adverse effects not elsewhere classified	698	2.5	429	2.9
All others		12,168	43.2	5,866	40.0
Total		28,159		14,663	

\* Data unavailable for 2003.

Table 2.29 shows the conditions for which the most accession medical waivers were considered by the Marine waiver authority during 1998–2002 and the corresponding numbers of waiver considerations and approvals for those conditions in 2003.

Asthma is the condition for which waivers were most often considered in 1998–2002, with 2,090 considerations. It was also the condition involved in the highest number of waiver approvals during this time, with 1,161. Hearing loss and disorders of refraction had the second and third most considerations, respectively, with more approvals for disorders of refraction.

The ordering by condition in 2003 was similar to that in 1998–2002, although the approvals differed. In particular, few waiver approvals (59 of 295) were considered for hearing deficiency.

**TABLE 2.29. TOP DoD DIAGNOSES OF WAIVERS CONSIDERED AND GRANTED FOR ACTIVE DUTY ENLISTED APPLICANTS IN 1998–2002 VS 2003: MARINES**

DoD code	Definition	1998–2002				2003			
		Applied		Granted		Applied		Granted	
		Count	%	Count	%	Count	%	Count	%
493	Asthma	2,090	12.7	1161	12.8	437	12.3	284	13.8
389	Hearing deficiency	1,825	11.1	594	6.5	295	8.3	59	2.9
367	Disorders of refraction and accommodation	1,422	8.6	761	8.4	315	8.8	190	9.3
796	Miscellaneous conditions	824	5.0	436	4.8	182	5.1	103	5.0
717	Internal derangement of knee	768	4.7	556	6.1	74	2.1	46	2.2
401	Hypertension	757	4.6	599	6.6	235	6.6	188	9.2
733	Other disorders of bone and cartilage	689	4.2	525	5.8	268	7.5	209	10.2
754	Certain congenital musculoskeletal deformities	639	3.9	478	5.3	36	1.0	20	1.0
300	Neurotic, mood, somatoform, dissociative, or factitious disorders	499	3.0	266	2.9	88	2.5	44	2.1
314	ADHD	479	2.9	335	3.7	257	7.2	196	9.5
995	Certain adverse effects not elsewhere classified	297	1.8	148	1.6	70	2.0	39	1.9
905	Late effects of musculoskeletal and connective tissue injuries	288	1.7	180	2.0	34	1.0	22	1.1
726	Peripheral enthesopathies and allied syndromes	255	1.5	163	1.8	62	1.7	34	1.7
746	Valvular heart diseases, congenital	235	1.4	131	1.4	56	1.6	38	1.9
785	Tachycardia persistent	223	1.4	187	2.1	38	1.1	32	1.6
P11	Keratorefractive surgery	60	0.4	37	0.4	87	2.4	71	3.5
All others		5,206	31.2	2,591	27.8	1,076	28.9	527	23.3
Total		16,556		9,148		3,610		2,102	

Table 2.30 shows the conditions for which the most accession medical waivers were considered by the Air Force waiver authority during 1998–2002 and the corresponding numbers of waiver considerations and approvals for those conditions in 2003.

Disorders of refraction were the condition for which Air Force waivers were most often considered in 1998–2002 ( $n=1,400$ ). The condition was also involved in the highest number of waiver approvals during this time ( $n = 810$ ), more than double that of the second most common approval condition. Asthma was the second leading condition considered for waiver



during 1998–2002, followed by hearing deficiency. ADHD was the third most commonly considered waiver condition in 2003, overtaking hearing deficiency.

The distribution of waiver approvals looks considerably different, with few (34 of 648 in 1998–2002) being granted for hearing deficiency and many being granted for ADHD, reduction of fracture/dislocation, and pes planus. A similar pattern was seen in approvals for 2003, although the approval percentage for hearing deficiency was considerably higher.

**TABLE 2.30. TOP ICD9 DIAGNOSES OF WAIVERS CONSIDERED AND GRANTED FOR ACTIVE DUTY ENLISTED APPLICANTS IN 1998–2002 VS 2003: AIR FORCE\***

ICD9 code	Definition	1998–2002				2003			
		Applied		Granted		Applied		Granted	
		Count	%	Count	%	Count	%	Count	%
367	Disorders of refraction and accommodation	1,400	13.0	810	16.4	201	9.3	103	9.7
493	Asthma	1,084	10.1	304	6.2	191	8.8	99	9.3
389	Hearing deficiency	648	6.0	34	0.7	97	4.5	44	4.1
314	ADHD	482	4.5	368	7.5	145	6.7	78	7.3
P81	Repair of cruciate ligament	431	4.0	387	7.8	50	2.3	24	2.3
P79	Reduction of fracture and dislocation	373	3.5	296	6.0	90	4.2	45	4.2
734	Pes planus (acquired)	339	3.1	254	5.2	27	1.2	12	1.1
296	Episodic mood disorders	288	2.7	133	2.7	45	2.1	21	2.0
718	Other derangement of joint	255	2.4	112	2.3	57	2.6	28	2.6
754	Certain congenital musculoskeletal deformities	225	2.1	49	1.0	36	1.7	22	2.1
719	Other and unspecified disorder of joint	207	1.9	77	1.6	50	2.3	20	1.9
692	Contact dermatitis and other eczema	165	1.5	17	0.3	50	2.3	16	1.5
783	Symptoms concerning nutrition, metabolism, and development	137	1.3	123	2.5	182	8.4	103	9.7
368	Visual disturbances	136	1.3	45	0.9	53	2.5	32	3.0
All others		4,602	42.7	1,922	39.0	888	41.1	603	56.6
Total		10,772		4,931		2,162		1,065	

\* More than 200 applicants in 2002 and 400 applicants in 2003 with pending waiver status were not included.



## **Part II: With Accession**

Table 2.31 shows the numbers of applicants for enlisted service granted accession medical waiver approvals during each year from 1998 through 2003, all service branches combined. Also shown are the numbers and percentages of these individuals who were subsequently gained onto active duty within 1 and 2 years of application at MEPS.

As seen in “Part I: Without Accession,” the numbers of waiver approvals have generally increased over the period, with 9,025 in 1998 to a peak of more than 14,000 in 2003. The number of approvals shown for 2003 is an underestimate, because Navy data were unavailable for most of 2003.

Accession percentages of these applicants were generally over 50% within 1 year of initial application. The only exception is among those granted a waiver in 2003, for which there were incomplete follow-up data. Also, except for 2003, the 2-year accession percentages ranged from 64% to 70%.

**TABLE 2.31. ACCESSIONS WITHIN 1 AND 2 YEARS OF PHYSICAL EXAMINATION  
FOR ENLISTED APPLICANTS WHO RECEIVED A WAIVER IN 1998–2003 BY YEAR**

Year of waiver consideration	Applicants with waivers granted	Applicants who accessed within 1 year of application		Applicants who accessed within 2 years of application	
		Count	Rate/100	Count	Rate/100
1998	9,025	4,994	55.3	6,061	67.2
1999	10,722	6,433	60.0	7,474	69.7
2000	11,393	6,605	58.0	7,572	66.5
2001	10,300	5,920	57.5	6,757	65.6
2002	13,144	7,488	57.0	8,628	65.6
2003	14,394	4,807	33.4	—	—
Total	68,978	36,247		36,492	

\*Incomplete follow-up time.

Tables 2.32–2.36 summarize waiver considerations during 1998–2002 and 2003, separately, among individuals with a corresponding MEPS application record. Subsequent accession numbers are also shown. These are shown for several demographic factors. Demographic data for these tables are drawn by matching records to MEPCOM applicant data, so numbers of records in these tables are less than those in Table 3.6 owing to nonmatches. Numbers of total records also vary slightly depending on the completeness of data on the demographic factor being considered.

Table 2.32 shows the gender distribution of applicants receiving a waiver and those who subsequently came onto active duty. The distribution was similar in 1998–2002 and 2003. Females accounted for a slightly smaller percentage of subsequent accessions than of waiver approvals.

**TABLE 2.32. ACCESSIONS FOR ACTIVE DUTY ENLISTED APPLICANTS  
WHO RECEIVED A WAIVER IN 1998–2002 VS 2003: GENDER**

Gender	1998–2002				2003			
	All granted waivers		Accessed only		All granted waivers		Accessed only	
	Count	%	Count	%	Count	%	Count	%
Male	43,870	80.4	32,492	82.7	11,697	81.3	4,833	84.1
Female	10,713	19.6	6,817	17.3	2,696	18.7	915	15.9

Table 2.33 shows that the age distribution of applicants with waiver approvals was similar in 1998–2002 and 2003. The age distribution of those who were accessed closely reflected the applicant distribution.

**TABLE 2.33. ACCESSIONS FOR ACTIVE DUTY ENLISTED APPLICANTS  
WHO RECEIVED A WAIVER IN 1998–2002 VS 2003: AGE**

Age	1998–2002				2003			
	All granted waivers		Accessed only		All granted waivers		Accessed only	
	Count	%	Count	%	Count	%	Count	%
17–20 yr	40,031	73.4	29,279	74.5	9,502	66.1	4,051	70.5
21–25 yr	10,516	19.3	7,574	19.3	3,085	21.4	1,219	21.2
26–30 yr	2,962	5.4	1,880	4.8	1,045	7.3	344	6.0
>30 yr	1,039	1.9	548	1.4	754	5.2	131	2.3

Table 2.34 shows that whites made up a slightly greater percentage of waiver approvals in 2003. This increase may reflect a difference in the applicant pool, differing likelihood of disqualifying conditions by race, or random variation. The distribution of subsequent accessions was similar to the applicant distribution.

**TABLE 2.34. ACCESSIONS FOR ACTIVE DUTY ENLISTED APPLICANTS  
WHO RECEIVED A WAIVER IN 1997–2002 VS 2003: RACE**

Race	1998–2002				2003			
	All granted waivers		Accessed only		All granted waivers		Accessed only	
	Count	%	Count	%	Count	%	Count	%
White	40,232	73.7	28,962	73.7	10,776	76.9	4,336	76.6
Black	9,369	17.2	6,758	17.2	1,886	13.5	780	13.8
Other	4,982	9.1	3,589	9.1	1,351	9.6	543	9.6

Table 2.35 shows the distribution of education level at the time of application among applicants with a waiver approval and among those subsequently accessed. The distribution among waiver recipients in 2003 was similar to that in 1998–2002. Note that many of these who have less than a high school education at the time of application finish high school before enlistment.

**TABLE 2.35. ACCESSIONS FOR ACTIVE DUTY ENLISTED APPLICANTS WHO RECEIVED A WAIVER IN 1997–2002 VS 2003: EDUCATION LEVEL**

Education level	1998–2002				2003			
	All granted waivers		Accessed only		All granted waivers		Accessed only	
	Count	%	Count	%	Count	%	Count	%
Below HS senior*	2,524	4.6	1,449	3.7	616	4.3	184	3.2
HS senior	15,837	29.1	11,028	28.1	4,116	28.7	1,734	30.2
HS diploma	33,566	61.6	25,174	64.1	8,359	58.2	3,505	61.1
Some college	595	1.1	386	1.0	218	1.5	67	1.2
Bachelor's and above	1,976	3.6	1,210	3.1	1,051	7.3	243	4.2

\* Encompasses the following: 1) those pursuing completion of the GED or other test-based high school equivalency diploma, vocational school, or secondary school, etc.; 2) those not attending high school and who are neither a high school graduate nor an alternative high school credential holder; 3) those attending high school and not yet seniors.

Table 2.36 summarizes percentile scores on the AFQT among applicants and subsequent accessions with an accession medical waiver. The score distribution among waiver recipients in 2003 is skewed slightly toward the extremes compared with waiver recipients in 1998–2002, with greater percentages in the highest and lowest percentile ranges. The same is true of the subset of waiver recipients who subsequently accessed.

**TABLE 2.36. ACCESSIONS FOR ACTIVE DUTY ENLISTED APPLICANTS WHO RECEIVED A WAIVER IN 1997–2001 VS 2002: AFQT SCORE**

AFQT score	1998–2002				2003			
	All granted waivers		Accessed only		All granted waivers		Accessed only	
	Count	%	Count	%	Count	%	Count	%
93–99	3,384	6.2	2,277	5.8	1,383	10.1	553	9.7
65–92	19,547	35.9	13,861	35.3	5,609	40.8	2,355	41.2
50–64	14,650	26.9	10,748	27.4	3,310	24.1	1,354	23.7
30–49	15,869	29.2	11,722	29.9	2,977	21.7	1,258	22.0
1–29	951	1.7	652	1.7	469	3.4	191	3.3



## **EPTS Discharges**

Discharges for EPTS medical conditions are of vital interest to AMSARA. A discharge for a medical condition can be classified as EPTS if the condition was verified to have existed before the recruit began service and if the complications leading to discharge arose no more than 180 days after the recruit began duty. As discussed under “Data Sources,” EPTS data reporting has varied both by site and over time within sites. In addition, it appears that the numbers of records provided across all sites in CY 2003 are lower than in previous years; this may be due in part to delays in transmission of records from MEPCOM to AMSARA. The numbers shown below should be reviewed in the context of these data shortcomings.

Part I summarizes the numbers of EPTS records provided to AMSARA, irrespective of whether a corresponding accession record is available. These include EPTS records for active duty, reserves, and National Guard members. Part II summarizes only those records for which a corresponding accession record is available. Accordingly, only discharges among active duty enlistees are included.

### ***Part I: Irrespective of Accession Record***

Included among the EPTS records provided to AMSARA are records for recruits in basic training for the reserves or guard for which AMSARA does not currently hold accessions data. In addition, some active duty enlistee EPTS records do not have a matching accession record. Accordingly, the tables in Part I show the numbers of EPTS discharge records provided by the basic training sites, irrespective of whether a corresponding accession record is available to AMSARA.

Table 2.37 shows the numbers of EPTS discharge records by service branch, service component, and year during 1998–2003. With few exceptions, the numbers of EPTS discharges are clearly unstable over the time examined for any component in any service. For example, the number of records received for the Navy active duty was 5,123 in 1998, dropped almost 50% to 2,537 in 1999, and then dropped to just over 1,800 in 2001 and 2002.

The numbers of records received for the Navy reserve were low over the period, with only one record in both 2000 and 2001. Similarly, the numbers of records provided by the Marines fluctuated dramatically for both active duty and reserve members. Finally, the Air Force active duty numbers were fairly stable until 1999, when reporting of EPTS discharges dropped dramatically. After low numbers in 2000 and 2001, the numbers of records provided for 2002 and 2003 have returned to a more plausible level.

Although the numbers for the Army, particularly the active duty component, appear relatively stable, reporting by site has fluctuated considerably over this period (see Data Sources section for details). Therefore the apparent stability for the Army as a whole does not reflect full reporting.

TABLE 2.37. EPTS DISCHARGES BY SERVICE IN 1998–2003\*

Service	1998	1999	2000	2001	2002	2003	Total
<b>Army</b>							
Active duty	3,644	3,040	3,381	3,094	3,281	3,463	19,903
Guard	1,021	774	670	556	506	556	4,083
Reserves	643	457	467	405	225	352	2,549
<b>Navy</b>							
Active duty	5,123	2,537	1,870	1,820	1,814	1,150	14,314
Reserves	22	10	1	1	2	5	41
<b>Marines</b>							
Active duty	1,408	1,234	1,057	889	1,091	885	6,564
Reserves	127	101	109	85	73	135	630
<b>Air Force†</b>							
Active duty	1,016	929	202	257	752	702	3,858
Guard	57	34	12	5	3	4	115
Reserves	40	47	8	8	26	54	183
<b>Total</b>	<b>13,101</b>	<b>9,163</b>	<b>7,777</b>	<b>7,120</b>	<b>7,773</b>	<b>7,306</b>	<b>52,240</b>

\* Data reporting incomplete (see Section 4).

† Air Force did not provide EPTS discharge records from April 2000 to September 2001.

Table 2.38 shows EPTS discharges among active duty enlistees according to the MEPCOM medical categories, which are sorted according to the numbers of discharges from the Army, the largest service and the one with the most EPTS discharges. Asthma and orthopedic conditions (e.g., knee, feet, back, and other) were major causes of EPTS discharges in all services. Psychiatric conditions were the most common EPTS discharge for the Navy and Marines, accounting for 44.1% and 33.9%, respectively. Note considerable differences in how each service categorizes and reports EPTS discharges. Accordingly, differences across services may reflect procedural differences more than true EPTS rates, and any comparisons across services are tenuous, at best.



TABLE 2.38. EPTS DISCHARGES IN 1998–2003 BY CAUSES

Category	Army		Navy		Marines		Air Force*	
	Count	%	Count	%	Count	%	Count	%
Asthma	3,370	16.9	1,478	10.3	815	12.4	1,015	26.3
Psychiatric—other	3,152	15.8	6,331	44.2	2,211	33.7	90	2.3
Orthopedics—other	2,628	13.2	924	6.5	684	10.4	371	9.6
Orthopedics—knee	2,255	11.3	798	5.6	421	6.4	523	13.6
Orthopedics—feet	2,127	10.7	406	2.8	219	3.3	355	9.2
Orthopedics—back	1,876	9.4	580	4.1	264	4.0	370	9.6
Other	689	3.5	556	3.9	354	5.4	204	5.3
Genitourinary system	679	3.4	448	3.1	182	2.8	119	3.1
Neurology—other	576	2.9	522	3.6	349	5.3	217	5.6
Abdomen and viscera	426	2.1	165	1.2	147	2.2	87	2.3
Cardiovascular—other	342	1.7	257	1.8	147	2.2	82	2.1
Skin/lymphatics	306	1.5	306	2.1	109	1.7	65	1.7
Chest/lung—other	251	1.3	142	1.0	101	1.5	55	1.4
Eyes—other	238	1.2	392	2.7	115	1.8	86	2.2
Seizure disorder	223	1.1	143	1.0	81	1.2	43	1.1
Hypertension	182	0.9	77	0.5	64	1.0	10	0.3
Vision/refraction	161	0.8	215	1.5	47	0.7	51	1.3
Ears—hearing	103	0.5	114	0.8	181	2.8	12	0.3
Schizophrenia	45	0.2	31	0.2	10	0.2	1	0.0
Ears—other	30	0.2	100	0.7	46	0.7	5	0.1
Missing	244	1.2	329	2.3	17	0.3	97	2.5
Total	19,903	100.0	14,314	100.0	6,564	100.0	3,858	100.0

\* Air Force did not provide records for discharges in April 2000–September 2001, so the 1996–2001 aggregate numbers for Air Force are underestimates.

The medical causes of EPTS discharges for each service are more thoroughly examined by medical condition using the subset of ICD9 codes listed in DoD Instruction 6130.4. Tables 2.39–2.42 summarize the primary EPTS discharge diagnoses for 1998–2003, sorted by the number of discharges in 2003.

Table 2.39 shows the top 20 conditions leading to EPTS discharge in the Army during 1998–2003. Asthma, psychological conditions, and orthopedic conditions were the most common conditions underlying the reported EPTS discharges. The numbers of reported discharges have fluctuated over these years for several conditions, including a dramatic increase in neurotic, mood, somatoform, dissociative, or factitious disorder.



**TABLE 2.39. TOP 20 PRIMARY EPTS DISCHARGE DoD DIAGNOSES  
FOR ACTIVE DUTY REGULAR RECRUITS IN 1998–2003: ARMY**

DoD code	Definition	1998	1999	2000	2001	2002	2003
493	Asthma	571	408	526	565	665	672
300	Neurotic, mood, somatoform, dissociative, or factitious disorder	150	230	392	465	328	399
719.4	Disease or chronic pain of lower extremities	252	226	265	230	274	330
724	Spine and sacroiliac joints	261	205	178	159	211	261
905.2	Upper extremity deformities, injury, weakness, insufficient recovery, disease	98	94	109	111	159	176
718.1	Shoulder instability of any major joint	58	50	66	57	87	89
401	Hypertension	26	28	20	18	24	69
784	Headaches, recurrent, all types	73	41	50	48	80	58
717.7	Chondromalacia of patella or retropatellar knee pain syndrome	128	114	107	53	64	56
717.9	Unstable or internally deranged joint	69	45	52	34	48	53
345	Epilepsy, including seizures	43	38	34	37	61	51
734, 754.6	Flat feet	265	188	253	102	74	50
732.4	Osgood-Schlatter disease	64	33	42	34	38	46
314	Academic skills defects	26	33	27	28	31	45
737	Deviation or curvature of spine	75	56	52	39	37	38
295	Disorders with psychotic features	14	18	20	21	23	33
786.5	Chest pain unknown	32	21	14	14	16	31
995.0	Allergic manifestations	36	8	10	4	17	31
456.4	Varicocele	10	7	11	9	17	30
728.7	Plantar fasciitis	100	52	48	32	23	30
All others		1,293	1,145	1,105	1,034	1,004	915
Total		3,644	3,040	3,381	3,094	3,281	3,463

Table 2.40 shows the top 20 primary conditions leading to EPTS discharge among Navy recruits during 1998–2003, with categories determined by the subset of ICD9 codes listed in DoD Instruction 6130.3. Psychological/personality/behavioral disorders and asthma lead the list. The numbers of reported discharges are unstable for this 5-year period for most of the conditions shown. For example, the numbers of EPTS discharges for personality disorders went from a high of 581 in 1998 to just 87 in 2003, a drop of 89% in just 2 years.

In fact, the numbers for 1998 are generally much higher than for the other years for most of the listed conditions. This generally reflects the overall high numbers of reported EPTS discharges from the Navy for 1998 seen in Table 2.37, although some of the yearly deviations by condition cannot be fully explained by this phenomenon. Notable exceptions are for disease or chronic pain of one or both lower extremities, which shows a spike in 2001, and hearing deficiency, for which the highest numbers of discharges occurred during 2000–2002.

**TABLE 2.40. TOP 20 PRIMARY EPTS DISCHARGE DoD DIAGNOSES FOR ACTIVE DUTY REGULAR RECRUITS IN 1998–2003: NAVY**

DoD code	Definition	1998	1999	2000	2001	2002	2003
493	Asthma	507	381	207	118	147	140
300	Neurotic, mood, somatoform, dissociative, or factitious disorder	731	262	168	109	212	138
301	Personality disorders	581	167	129	136	268	87
719.4	Disease or chronic pain of lower extremities	46	48	103	131	44	68
313	Behavior disorders	810	104	87	100	153	62
314	Academic skills defects	169	62	26	21	66	57
724	Spine and sacroiliac joints	56	34	56	47	28	36
734, 754.6	Flat feet	59	12	16	44	26	24
371.6	Keratoconus	26	19	22	23	9	21
737	Deviation or curvature of spine	46	39	24	26	24	21
389	Hearing deficiency	13	16	25	23	25	19
784	Headaches, recurrent, all types	122	92	48	27	28	19
345	Epilepsy, including seizures	38	41	19	25	18	18
303	Alcohol dependence	302	133	37	15	38	15
305	Alcohol abuse including other nondependent use of drugs	95	39	13	10	38	15
312	Specific academic skills defects	61	29	27	18	41	15
905.2	Upper extremity deformities, injury, weakness, insufficient recovery, disease	25	24	26	46	20	15
796	Miscellaneous codes	73	39	13	14	10	13
401	Hypertension	18	13	15	19	21	12
717.9	Unstable or internally deranged joint	36	33	33	32	16	12
All others		1,309	950	776	836	582	343
Total		5,123	2,537	1,870	1,820	1,814	1,150

Table 2.41 shows the top 20 conditions leading to EPTS discharge among Marine enlistees during 1998–2003. Many of the most common reasons for EPTS discharge among the Marines were psychological in nature. The most common specific condition in 2003, and in 1998–2003 as a whole, was neurotic, mood, somatoform, dissociative, or factitious disorder. Asthma was the next most common in both 2003 and 1998–2003.

The third most common EPTS condition for active duty enlisted Marines was suicide attempt/behavior, although the numbers of records reported for this category declined over the period. Informal review of these records indicated that most were related to behavior rather than actual attempts. Anecdotal evidence suggests that the services take a risk-averse approach to suicide threats, preferring to allow release of all who make such threats rather than risk an actual suicide. This may lead to increased suicide threats by recruits seeking to escape the rigors of basic training.



The numbers of EPTS records changed markedly in certain categories. This may be partly due to fluctuations in overall data reporting over the period. Further scrutiny would be required to determine the reasons for these dramatic changes in reported discharge numbers.

**TABLE 2.41. TOP 20 PRIMARY EPTS DISCHARGE DoD DIAGNOSES FOR ACTIVE DUTY REGULAR RECRUITS IN 1998–2003: MARINES**

DoD code	Definition	1998	1999	2000	2001	2002	2003
300	Neurotic, mood, somatoform, dissociative, or factitious disorder	169	120	102	130	191	175
493	Asthma	125	138	125	155	165	112
300.9	Suicide (attempted or suicidal behavior)	251	156	66	89	69	45
314	Academic skills defects	40	25	14	15	32	36
784	Headaches, recurrent, all types	45	24	35	20	54	33
301	Personality disorders	27	22	16	20	31	32
719.4	Disease or chronic pain of lower extremities	48	52	48	25	20	28
389	Hearing deficiency	44	34	33	28	17	25
724	Spine and sacroiliac joints	27	27	36	21	23	24
905.2	Upper extremity deformities, injury, weakness, insufficient recovery, disease	25	17	27	20	15	19
995.0	Allergic manifestations	17	15	6	12	21	18
718.1	Shoulder instability of any major joint	8	24	22	8	5	15
345	Epilepsy (including seizures)	26	14	14	6	20	14
854	Head injury	9	3	6	3	11	14
315	Learning disorder	8	5	5	2	7	13
786.5	Chest pain	17	12	7	13	16	10
831	Shoulder dislocation	30	29	16	18	19	10
796	Miscellaneous codes	7	9	10	8	13	9
717.9	Unstable or internally deranged joint	13	9	10	5	10	8
746	Valvular heart disease, congenital	10	13	12	7	11	8
All others		462	486	447	284	341	237
Total		1,408	1,234	1,057	889	1,091	885

Table 2.42 shows the top 20 primary conditions leading to EPTS discharge among Air Force recruits during 1998–2003 (except for 2000–2001, for which numbers are unreliable because the Air Force provided few data on EPTS discharges).

Asthma was the most common cause, with 253 reported EPTS discharges in 2003. Second and third, with numbers considerably lower than those for asthma, were “disease or chronic pain of lower extremities” and “spine and sacroiliac joints.” Note that no psychological conditions appear among the leading causes in any year, most likely reflecting a difference in Air Force categorization of such problems when leading to discharge.



**TABLE 2.42. TOP 20 PRIMARY EPTS DISCHARGE DoD DIAGNOSES  
FOR ACTIVE DUTY REGULAR RECRUITS IN 1998–2003: AIR FORCE\***

DoD code	Definition	1998	1999	2002	2003
493	Asthma	227	184	271	253
719.4	Disease or chronic pain of lower extremities	98	117	65	35
724	Spine and sacroiliac joints	95	101	49	34
784	Headaches, recurrent, all types	54	56	28	28
734, 754.6	Flat feet	49	22	39	26
905.2	Upper extremity deformities, injury, weakness, insufficient recovery, disease	32	22	15	18
717.9	Unstable or internally deranged joint	17	9	7	15
746	Valvular heart diseases	2	4	6	12
685	Pilonidal cyst	5	2	2	11
345	Epilepsy, including seizures	13	9	6	10
795	Abnormal Pap smear	6	7	2	10
905.4	Lower extremity deformities, injury, weakness, insufficient recovery, disease	25	13	8	10
371.6	Keratoconus	9	2	8	7
717.83	Old disruption of anterior cruciate ligament	2	6	7	7
732.4	Juvenile osteochondrosis of lower extremity, excluding foot	4	8	8	7
796	Miscellaneous codes	12	8	4	7
836	Knee dislocation	3	7	3	6
300	Neurotic, mood, somatoform, dissociative, or factitious disorder	7	4	4	5
427.0	Supraventricular tachycardia	3	1	2	5
All others		352	347	215	191
Total		1,016	929	752	702

\* Air Force did not provide records for discharges that occurred in April 2000–September 2001.

## **Part II: With Accession**

EPTS discharges among recruits accessed during 1998–2003 are summarized in Tables 2.43–2.49. Note that all references to years refer to the year of accession rather than year of discharge. Discharge numbers reflect only discharges occurring among individuals with an accession record in the specified year.

Relative risks are used to compare the likelihood of EPTS discharge between demographic groups. A baseline group is chosen for each comparison, and in most cases this is the largest group. All comparisons, particularly those by service branch, should be taken in light of the EPTS data reporting fluctuations by service and over time (discussed under “Data Sources”).

Table 2.43 shows EPTS discharges reported among individuals accessed into enlisted service during each year from 1998 through 2003. The numbers of EPTS discharges reported for

each year since 2000 are considerably lower than the numbers reported in 1998 and 1999, whereas the numbers of accessions were generally higher during these later years. It is unclear whether this represents a decrease in likelihood of EPTS discharge over time, less compliance in data reporting, or differences in how discharges have come to be classified.

**TABLE 2.43. EPTS DISCHARGES BY ACCESSION YEAR\***

Year	Total accessed	Count	%
1998	135,806	8,091	5.96
1999	172,539	7,086	4.11
2000	180,283	5,645	3.13
2001	170,165	4,916	2.89
2002	176,559	5,999	3.40
2003	161,814	4,722	2.92

\*Air Force did not provide records for discharges in April 2000–September 2001, so the discharge rates in 2000 and 2001 are underestimated.

Table 2.44 shows numbers of accessions and subsequent EPTS discharges reported by service over 1998–2003. Relative to Army enlistees, the percentage of accessions ending in a reported EPTS discharge is significantly higher among Navy enlistees and significantly lower among Marines and Air Force enlistees. However, EPTS reporting is not uniform across all services or even across different basic training sites within the same service (see “EPTS Discharges” in Section 4). Moreover, the services differ regarding which discharges are classified as EPTS. Therefore, differences observed between services may more reflect procedural or reporting differences than actual differences of discharge likelihood.

**TABLE 2.44. ENLISTED ACCESSIONS IN 1998–2003 ENDING IN EPTS DISCHARGE: SERVICE\***

Service	Total accessed	Discharged	% Discharged	Relative risk	95% CI
Army	365,857	15,630	4.27	1.14	
Navy	255,314	11,928	4.67	1.24	1.22, 1.27
Marines	182,166	5,651	3.10	0.83	0.80, 0.85
Air Force	193,829	3,250	1.68	0.45	0.43, 0.46

\* Air Force did not provide records for discharges in April 2000–September 2001, so the discharge rate and relative risk for the Air Force are underestimates. Without considering 2000 and 2001, the discharge rate would be 2.26%.

Table 2.45 shows the numbers of accessions and subsequent EPTS discharges reported by gender. The risk of EPTS discharges is high among female enlistees relative to males.

**TABLE 2.45. ENLISTED ACCESSIONS ENDING IN EPTS DISCHARGE IN 1998–2003: GENDER**

Gender	Total accessed	Discharged	% Discharged	Relative risk	95% CI
Male	817,747	27,717	3.39	1.00	
Female	179,415	8,741	4.87	1.44	1.40, 1.47



Table 2.46 shows the numbers of accessions and subsequent EPTS discharges reported by age at accession. The risk of EPTS discharge is high in the age 21–25 and age 26–30 groups relative to the youngest group.

**TABLE 2.46. ENLISTED ACCESSIONS ENDING IN EPTS DISCHARGE IN 1998–2003: AGE**

Age	Total accessed	Discharged	% Discharged	Relative risk	95% CI
17–20 yr	736,853	25,854	3.51	1.00	
21–25 yr	211,132	8,288	3.93	1.12	1.09, 1.15
26–30 yr	39,318	1,823	4.64	1.32	1.26, 1.38
>30 yr	9,848	494	5.02	1.43	1.31, 1.56

Table 2.47 shows the numbers of accessions and subsequent EPTS discharges reported by race. The relative risk of EPTS discharge is significantly lower for blacks and for other nonwhites compared with whites.

**TABLE 2.47. ENLISTED ACCESSIONS ENDING IN EPTS DISCHARGE IN 1998–2003: RACE**

Race	Total accessed	Discharged	% Discharged	Relative risk	95% CI
White	708,751	27,917	3.94	1.00	
Black	182,344	5,718	3.14	0.80	0.77, 0.82
Other	103,151	2,746	2.66	0.68	0.65, 0.70

Table 2.48 shows the numbers of accessions and subsequent EPTS discharges reported by education level at the time of accession. The risk of EPTS discharge is low among those with some college and those who had completed college at the time of application relative to those who had not yet completed high school.

**TABLE 2.48. ENLISTED ACCESSIONS ENDING IN EPTS DISCHARGE IN 1998–2003: EDUCATION LEVEL**

Education level	Total accessed	Discharged	% Discharged	Relative risk	95% CI
Below HS	97,718	3,545	3.63	1.00	
HS diploma	850,779	31,545	3.71	1.02	0.99, 1.06
Some college	26,553	827	3.11	0.86	0.80, 0.92
Bachelor's and above	20,582	493	2.40	0.66	0.60, 0.72

Table 2.49 shows the numbers of accessions and subsequent EPTS discharges reported by AFQT percentile score groups. The relative risk of EPTS discharge generally increases as the AFQT score decreases.

**TABLE 2.49. ENLISTED ACCESSIONS ENDING IN EPTS DISCHARGE IN 1998–2003: AFQT SCORE**

AFQT score	Total accessed	Discharged	% Discharged	Relative risk	95% CI
93–99	44,441	1,110	2.50	1.00	
65–92	344,152	11,092	3.22	1.29	1.21, 1.37
50–64	275,701	10,688	3.88	1.55	1.46, 1.65
30–49	307,911	12,641	4.11	1.64	1.55, 1.75
1–29	21,592	916	4.24	1.70	1.56, 1.85



## Disability Discharges among Army and Air Force Active Duty Enlistees

Data on disability discharge considerations are compiled separately for each service by its disability agency. The Army and Air Force disability agencies have provided data on all disability discharge considerations during 1998–2003. The Navy/Marines agency has provided data only on a diagnosis-specific request basis rather than for all actions. Consequently, only Army and Air Force disability discharge data are summarized.

### ***Part I: Without Accession Records***

Numbers are presented irrespective of accession records, so the years shown refer to the year of discharge. The individuals being discharged could have been in the service for any number of years. Medical diagnosis categories are taken from the Veterans Administration Schedule for Rating Disabilities (see “Disability” in Section 4).

Table 2.50 summarizes disability discharges in 1998–2002 and separately in 2003 among Army active duty enlistees by medical category. Clearly the largest category, accounting for 69.7% of reported disability discharges in 1998–2002 and 56.5% in 2003, is musculoskeletal system, muscle injuries. A distant second is diseases of trachea and bronchi, accounting for 4.5% of discharges during 1998–2002 and 9.0% in 2003. Every other category accounted for less than 4% of disability discharges.

**TABLE 2.50. DIAGNOSIS CATEGORIES OF DISABILITY DISCHARGES  
FOR ACTIVE DUTY ENLISTEES IN 1998–2002 VS 2003: ARMY\***

Diagnosis category	1998–2002		2003	
	Count	%	Count	%
Musculoskeletal system, muscle injuries	20,199	69.7	4,430	56.5
Diseases of trachea and bronchi	1,302	4.5	702	9.0
Psychotic†, mental organic§, and psychoneurotic‡ disorders	629	2.2	267	3.4
Organic diseases of central nervous system	525	1.8	250	3.2
Endocrine system	299	1.0	113	1.4
Systemic condition	195	0.7	53	0.7
Heart	145	0.5	51	0.7
Diseases of eye, impairment of muscle function	131	0.5	41	0.6
Hemic and lymphatic systems	126	0.4	48	0.6
Diseases of genitourinary system	111	0.4	45	0.5
Other	5,306	18.3	1,834	23.4
Total	28,968	100.0	8,722	100.0

\* About 900 diagnoses were missing in 2003, and 20 were missing in 2002.

† Schizophrenia, bipolar disorder, major depression, paranoid disorders, and psychoses.

§ Various dementias.

‡ Generalized anxiety disorders; psychogenic amnesia; psychogenic fugue; multiple personality disorder; conversion disorder; psychogenic pain disorder; phobic, obsessive compulsive dysthymic, adjustment, depersonalization, and posttraumatic disorders; and hypochondriasis.

Table 2.51 summarizes disability discharges in 1998–2002 and separately in 2003 among Air Force active duty enlistees by medical category. The largest category, accounting for 23.7% of reported disability discharges in 1998–2002 and 32.5% in 2003, is musculoskeletal system, muscle injuries. The next most common category is diseases of trachea and bronchi, which accounted for 15.2% of discharges in 1998–2002 and 12.4% in 2003.

**TABLE 2.51. DIAGNOSIS CATEGORIES OF DISABILITY DISCHARGES IN 1998–2002 VS 2003: AIR FORCE**

Diagnosis category	1998–2002		2003	
	Count	%	Count	%
Musculoskeletal system, muscle injuries	2,691	23.7	499	32.5
Diseases of trachea and bronchi	1,734	15.2	191	12.4
Endocrine system	668	5.9	39	2.5
Psychotic*, mental organic†, and psychoneurotic§ disorders	506	4.4	119	7.8
Heart	429	3.8	16	1.0
Organic diseases of central nervous system	411	3.6	28	1.8
Diseases of genitourinary system	235	2.1	10	0.7
Systemic condition	192	1.7	9	0.6
Hemic and lymphatic systems	190	1.7	16	1.0
Eye	150	1.3	10	0.7
Other	4,167	36.6	598	39.0
<b>Total</b>	<b>11,373</b>	<b>100.0</b>	<b>1,535</b>	<b>100.0</b>

\* Schizophrenia, bipolar disorder, major depression, paranoid disorders, and psychoses.

† Various dementias.

§ Generalized anxiety disorders; psychogenic amnesia; psychogenic fugue; multiple personality disorder; conversion disorder; psychogenic pain disorder; phobic, obsessive compulsive dysthymic, adjustment, depersonalization, and posttraumatic disorders; and hypochondriasis.

## **Part II: With Accession Records**

Numbers of medical disability discharges within the first year of service among Army and Air Force recruits accessed during 1998–2003 are presented. Relative risks are used to compare likelihood of disability discharge between demographic groups. A baseline group is chosen for each comparison, and in most cases this is the largest group. Disability discharge data were unavailable for the Marines and Navy (see “Disability” in Section 4).

Table 2.52 shows the numbers of disability discharges reported among individuals accessed into Army or Air Force enlisted service during each year from 1998 through 2003. Results are shown for each accession year group with a full year of follow-up on each individual.

The disability discharge percentages are increasing over the time shown. For those enlistees accessed in 1998, the percentage receiving disability discharge within 1 year of enlistment is 0.48. The percentage increases steadily by year to a high of 0.59% among enlistees accessed in 2002. Note that the rate is not shown for enlistees accessed in 2003, because follow-up data are only through the end of 2003, leaving less than a full year for these individuals.



**TABLE 2.52. DISABILITY DISCHARGES FOR ARMY AND AIR FORCE ACTIVE DUTY ENLISTED PERSONNEL WITHIN 1 YEAR OF SERVICE BY ACCESSION YEAR: 1998–2003**

Year	Total accessed	Discharged within 1 year of service	
		Count	%
1998	79,030	379	0.48
1999	93,138	527	0.57
2000	98,376	535	0.54
2001	90,444	497	0.55
2002	104,111	619	0.59
2003	94,587	217	0.23

Table 2.53 shows numbers of accessions and subsequent disability discharges reported by service over 1998–2003. Relative to Army enlistees, the percentage of accessions ending in a reported disability discharge is significantly lower among Air Force enlistees.

**TABLE 2.53. ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 1 YEAR OF SERVICE IN 1998–2003: SERVICE**

Service	Total accessed	Discharged within 1 year of accession	% Discharged	Relative risk	95% CI
Army	365,857	2,171	0.59	1.00	
Air Force	193,829	603	0.31	0.52	0.48, 0.57

Tables 2.54–2.56 show the percentages of Army and Air Force accessions ending in disability discharge within the first year of service by different demographic factors. Females had roughly double the risk of males for disability discharge. Likelihood of disability discharge within the first year of service was higher among the older age groups relative to the youngest. Whites were more likely than blacks or others to have an early disability discharge.

**TABLE 2.54. ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 1 YEAR OF SERVICE IN 1998–2003: GENDER**

Gender	Total accessed	Discharged within 1 year of accession	% Discharged	Relative risk	95% CI
Male	438,536	1,783	0.41	1.00	
Female	121,148	991	0.82	2.01	1.86, 2.17

**TABLE 2.55. ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 1 YEAR OF SERVICE IN 1998–2003: AGE**

Age	Total accessed	Discharged within 1 year of accession	% Discharged	Relative risk	95% CI
17–20 yr	394,498	1,666	0.42	1.00	
21–25 yr	132,337	781	0.59	1.40	1.28, 1.52
26–30 yr	26,179	230	0.88	2.08	1.81, 2.39
>30 yr	6,669	97	1.45	3.44	2.81, 4.22



**TABLE 2.56. ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 1 YEAR OF SERVICE IN 1998–2003: RACE**

Race	Total accessed	Discharged within 1 year of accession	% Discharged	Relative risk	95% CI
White	400,467	2,136	0.53	1.00	
Black	110,505	449	0.41	0.76	0.69, 0.84
Other	47,465	187	0.39	0.74	0.64, 0.86

Table 2.57 shows the numbers and likelihood of disability discharge within the first year of service by education level at the time of accession. Those who began service without having completed high school had the lowest risk of early disability discharge. By comparison, those who had completed high school and those who had finished some college had significantly higher relative risk of disability discharge. These findings are likely related to the earlier finding that younger applicants are at lower risk for early disability discharge.

**TABLE 2.57. ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 1 YEAR OF SERVICE IN 1998–2003: EDUCATION LEVEL**

Education level	Total accessed	Discharged within 1 year of accession	% Discharged	Relative risk	95% CI
Below HS	56,498	234	0.41	1.00	
HS diploma	467,339	2,355	0.50	1.22	1.06, 1.39
Some college	18,638	108	0.58	1.40	1.11, 1.76
Bachelor's and above	16,325	76	0.47	1.12	0.87, 1.46

Table 2.58 shows the numbers and likelihood of disability discharge within the first year of service by AFQT percentile score. None of the percentile groups was a significantly different risk from the highest percentile group for disability discharge.

**TABLE 2.58. ACTIVE DUTY ARMY AND AIR FORCE ENLISTED ACCESSIONS ENDING IN DISABILITY DISCHARGE WITHIN 1 YEAR OF SERVICE IN 1998–2003: AFQT SCORE**

AFQT score	Total accessed	Discharged within 1 year of accession	% Discharged	Relative risk	95% CI
93–99	26,165	115	0.44	1.00	
65–92	197,596	969	0.49	1.12	0.92, 1.35
50–64	160,786	819	0.51	1.16	0.95, 1.41
30–49	160,977	807	0.50	1.14	0.94, 1.39
1–29	12,006	62	0.52	1.17	0.86, 1.60

## Hospitalizations

### **Part I: Without Accession Records**

Hospitalization records of servicemembers admitted to any military treatment facility are summarized regardless of whether AMSARA has an accession record corresponding to the hospitalized individual. Except where indicated, the tables include all hospitalizations, regardless of length of time in service before hospitalization. For those tables that present results according to length of service before hospitalization, the length of service was taken from a field within each hospitalization record.

Table 2.59 shows overall Army hospitalization counts and percentages during the first and second years of service as well as counts of hospitalizations at all lengths of service. Results are shown separately for active duty enlistees, officers, and warrant officers during 1998–2003 combined.

A much greater percentage of hospitalizations among enlistees occurs during the first 2 years of service compared with officers or warrant officers. For example, over 13% of hospitalizations of Army enlistees occurred among those who were in the first year of service. The analogous percentages for officers and warrant officers were 2.4% and 0.4%, respectively.

The small percentage for warrant officers reflects the fact that individuals typically must rise through the enlisted ranks to become warrant officers; thus few achieve that level during the first 2 years of service. The greater influence of the first 2 years among enlistees compared with officers may partly reflect the tendency of enlistees to spend less time in the service than officers; i.e., a greater percentage of the enlistee force consists of individuals in the first 2 years of service. The greater physical demands of basic and advanced individual training may contribute to this disparity.

**TABLE 2.59. HOSPITALIZATIONS IN 1998–2003 BY SERVICE AND YEAR OF SERVICE: ACTIVE DUTY**

Years of service	Army		Navy		Marines		Air Force	
	Count	%	Count	%	Count	%	Count	%
<b>Active duty</b>								
0–1 yr	20,909	13.7	7,939	10.0	6,531	17.0	8,463	14.5
1–2 yr	22,653	14.8	9,188	11.6	5,786	15.0	5,689	9.8
All	153,127	—	79,189	—	38,446	—	58,283	—
<b>Officers</b>								
0–1 yr	365	2.4	107	1.2	32	1.8	215	2.2
1–2 yr	697	4.6	272	3.1	63	3.5	403	4.0
All	15,299	—	8,736	—	1,799	—	9,966	—
<b>Warrant officers</b>								
0–1 yr	9	0.4	0	0.0	0	0.0	3	50.0
1–2 yr	5	0.2	1	0.3	3	0.9	0	0.0
All	2,534	—	338	—	348	—	6	—

Table 2.60 shows hospitalizations among the reserves, and Table 2.61 shows hospitalizations for the National Guard. Hospitalization data on reserves and guard were only available for 1999–2003. Clearly the percentages of hospitalizations during the first 2 years of service are higher among enlistees than among officers and are much higher than among warrant officers. In fact, the hospitalizations for both these components are more heavily skewed toward the first year of service than for active duty Army enlistees.

**TABLE 2.60. HOSPITALIZATIONS IN 1999–2003 BY SERVICE AND YEAR OF SERVICE: RESERVES**

Years of service	Army		Navy		Marines		Air Force	
	Count	%	Count	%	Count	%	Count	%
<b>Active duty</b>								
0–1 yr	1,252	26.9	13	1.6	48	9.9	69	11.5
1–2 yr	221	4.7	45	5.6	38	7.8	40	6.7
All	4,656	—	804	—	485	—	599	—
<b>Officers</b>								
0–1 yr	30	4.0	7	2.3	2	3.5	2	1.7
1–2 yr	29	3.9	16	5.2	4	7.0	4	3.3
All	753	—	310	—	57	—	121	—
<b>Warrant officers</b>								
0–1 yr	1	1.1	0	0.0	0	0.0	0	0.0
1–2 yr	0	0.0	0	0.0	0	0.0	0	0.0
All	90	—	3	—	2	—	0	—

**TABLE 2.61. HOSPITALIZATIONS IN 1999–2003 BY SERVICE AND YEAR OF SERVICE: NATIONAL GUARD**

Years of service	Army		Air Force	
	Count	%	Count	%
<b>Active duty</b>				
0–1 yr	1,563	29.7	85	13.2
1–2 yr	275	5.2	38	5.9
All	5,264	—	643	—
<b>Officers</b>				
0–1 yr	5	1.6	1	1.5
1–2 yr	4	1.3	0	0.0
All	309	—	67	—
<b>Warrant officers</b>				
0–1 yr	0	0.0	0	0.0
1–2 yr	0	0.0	0	0.0
All	101	—	0	—

Table 2.62 compares hospitalization percentages during 1998–2002 with those in 2003 among active duty personnel according to medical category of the primary diagnosis code. Except for “others,” the categories are taken directly from the ICD9. The “others” category represents a wide range of diagnoses that do not fit the ICD9 categories. In addition, the five categories including the word “other” cover conditions not fitting the specific categories. For example, “other diseases of respiratory system” includes all respiratory tract diseases that do not fit into the specific respiratory conditions listed.



In 1998–2002, the largest medical category of hospitalizations (aside from “others”) was complications of pregnancy. In 2003, however, the percentage of hospitalizations accounted for by injuries was higher than in 1998–2002. In fact, injuries was the largest category for hospitalization among active duty Army and Marines personnel, and it was a close second among active duty Navy personnel. This is likely due, in part, to injuries associated with combat. In 2003, for example, more than 550 hospitalizations were due to fractures, about 250 to unspecified injuries, and about 230 to effects of heat and light in the Army active duty. By comparison, the total hospitalizations for these conditions during the 3 years between 1999 and 2001 were 243, 86, and 0, respectively.

**TABLE 2.62. ACTIVE DUTY HOSPITALIZATION PERCENTAGES OF MEDICAL CATEGORIES BY SERVICE**

Category	Army		Navy		Marines		Air Force	
	1998–2002	2003	1998–2002	2003	1998–2002	2003	1998–2002	2003
Complications of pregnancy	21.6	16.5	25.5	32.1	14.2	13.0	26.2	31.0
Injuries	10.3	16.1	7.5	7.8	12.3	17.6	6.0	6.1
Neurotic and personality disorders	8.9	7.5	10.8	7.0	9.7	8.2	8.5	7.7
Arthropathies and related symptoms	5.0	3.4	4.1	3.2	5.9	4.9	3.5	2.2
General symptoms	4.7	6.6	4.9	5.5	4.7	4.5	5.1	6.8
Other psychoses	3.5	2.8	3.8	2.7	2.8	2.7	2.9	2.6
Alcohol and drug dependence	2.4	1.3	2.1	2.1	2.5	1.6	1.8	1.0
Disease of oral cavity	2.3	2.1	1.3	1.2	1.6	0.9	2.5	2.4
Appendicitis	2.0	1.7	2.4	2.8	3.3	3.1	2.6	2.9
Infections of skin and subcutaneous tissue	1.9	2.5	2.0	2.4	4.2	5.8	1.4	1.5
Pneumonia and influenza	1.5	2.7	0.9	0.9	2.7	4.6	1.3	1.3
Other diseases of urinary system	1.5	2.3	1.3	1.3	1.2	1.5	1.6	1.8
Noninfectious enteritis and colitis	1.1	1.3	0.9	0.8	1.0	0.8	1.2	1.0
Hernia of abdominal cavity	1.1	1.8	0.7	0.5	1.6	1.2	0.5	0.5
Other diseases of respiratory system	1.0	0.7	1.1	0.7	2.0	1.1	1.1	1.0
Acute respiratory infections	1.0	0.9	0.4	0.3	0.9	0.7	0.9	0.4
Poisoning and toxic effects	0.9	0.8	0.7	0.8	1.6	1.3	0.5	0.5
Other diseases due to viruses	0.8	0.9	0.4	0.4	0.7	0.4	2.7	0.4
Chronic obstructive pulmonary disease	0.5	0.7	0.4	0.4	0.4	0.4	0.4	0.3
Viral diseases accompanied by exanthema	0.3	0.1	0.2	0.1	0.3	0.2	0.2	0.1
Other bacterial diseases	0.2	0.3	0.2	0.1	0.2	0.2	0.3	0.3
Others	27.6	27.2	28.4	27.0	26.1	25.4	28.9	28.3
Total	137,535	33,504	73,786	14,510	33,497	7,109	57,900	10,372

Table 2.63 compares the distribution of Army hospitalizations by medical conditions during 1999–2002 with those during 2003 among active duty, National Guard, and reserve service-members according to category of the primary diagnosis code. Hospitalization data on reservists and National Guard members are only available to AMSARA since 1999; hence the timeline is 1999–2002 for these results.

Comparisons across components for 2003 are similar to those for 1999–2002. However, the distribution of hospitalizations by cause differs considerably by component. In particular,

hospitalizations among reserve and National Guard members tend to be more heavily weighted toward acute conditions than those of active duty members. This may be partly due to the fact that the reserves and guard are only eligible for military hospitalization for conditions that become a problem while on duty. Pregnancy complications, for example, are typically an ineligible cause for hospitalization for the reserves and guard.

**TABLE 2.63. HOSPITALIZATION PERCENTAGES OF MEDICAL CATEGORIES FOR ALL SERVICES BY COMPONENT: 1999–2003**

Category	Active duty		National Guard		Reserves	
	1999–2002	2003	1999–2002	2003	1999–2002	2003
Complications of pregnancy	22.9	21.9	3.2	2.2	7.7	4.4
Neurotic and personality disorders	9.6	7.5	8.2	6.9	7.9	6.5
Injuries	9.0	12.8	11.4	14.8	10.1	15.3
General symptoms	4.9	6.1	8.2	10.7	8.7	11.5
Arthropathies and related disorders	4.3	3.3	2.9	2.7	2.9	3.5
Other psychoses	3.5	2.7	3.2	2.7	3.6	2.6
Appendicitis	2.4	2.3	2.2	1.8	2.5	1.8
Infections of skin and subcutaneous tissue	2.2	2.7	4.8	3.5	3.1	2.7
Disease of oral cavity	2.1	1.8	1.4	1.6	1.2	1.4
Alcohol and drug dependency	2.0	1.5	1.2	1.1	1.1	1.0
Pneumonia and influenza	1.6	2.3	5.0	5.3	3.2	2.5
Other diseases of urinary system	1.4	1.9	1.7	3.1	1.8	3.2
Other diseases due to viruses	1.2	0.6	2.3	1.1	1.4	1.0
Other diseases of respiratory system	1.1	0.8	0.9	0.5	0.8	0.6
Noninfectious enteritis and colitis	1.0	1.1	1.5	2.2	1.3	1.9
Hernia of abdominal cavity	0.9	1.2	2.1	2.2	1.3	2.5
Acute respiratory infection	0.9	0.7	2.0	1.2	1.6	0.9
Poisoning and toxic effects	0.8	0.8	0.7	0.9	0.5	0.9
Chronic obstructive pulmonary disease	0.5	0.5	0.9	0.8	0.6	1.0
Other bacterial diseases	0.2	0.2	0.4	0.4	0.4	0.2
Viral diseases accompanied by exanthema	0.2	0.1	0.7	0.1	0.6	0.1
Others	27.5	27.1	35.3	34.1	37.7	34.7
Total	236,821	65,495	3,633	2,756	4,280	3,611

## ***Part II: With Accession, Active Duty Enlistees Only***

Hospitalization records of active duty enlistees who began service during 1998–2003 and for whom AMSARA has a corresponding accession record are summarized. Relative risks are used to compare the likelihood of hospitalization across demographic groups. A baseline group is chosen for each comparison, and in most cases this is the largest group.

Table 2.64 shows hospitalizations and persons hospitalized among recruits accessed during each year from 1998 through 2003. The results are first presented for hospitalizations that occurred within the same year in which the recruit began active duty. This presentation forms



a fair basis of comparison for those gained in 2003, because hospitalization data were only available through 2003, allowing less than a full year of follow-up for this group. Results are also shown for each accession year group with a full year of follow-up on each individual.

It appears from the hospitalization percentages within the same year as accession that the percentage of new enlistees being hospitalized early in service has been increasing slightly. The pattern is less clear when examining hospitalization rates after one full year of follow-up on all enlistees.

**TABLE 2.64. HOSPITALIZATIONS FOR ACTIVE DUTY ENLISTEES BY ACCESSION YEAR: 1998–2003**

Year	Total accessed	Within same gain year			Within 1 year of service		
		Count	Person	% of persons	Count	Person	% of persons
1998	135,806	3,037	2,744	2.02	5,655	4,977	3.66
1999	172,539	3,888	3,548	2.06	7,478	6,611	3.83
2000	180,283	6,128	5,556	3.08	9,659	8,529	4.73
2001	170,165	4,072	3,680	2.16	7,400	6,444	3.79
2002	176,559	4,811	4,318	2.45	7,999	6,927	3.92
2003	161,814	4,496	4,062	2.51	N/A	N/A	NA

Tables 2.65–2.70 summarize numbers of hospitalizations and numbers of individuals hospitalized within 1 year of accession by demographic groups among enlisted personnel beginning duty during 1998–2003. Note that these numbers and percentages are slight underestimates, because follow-up data for recruits who were accessed in 2003 were incomplete.

Females had a higher likelihood of hospitalization. Whites and blacks were about equally likely to be hospitalized, but blacks had a higher likelihood than other non-whites. The difference in hospitalization likelihood by education level was slight, with those having some college having a slightly higher risk than those who did not complete high school. Finally, recruits in the 93–99 percentile group on the AFQT had a lower likelihood of hospitalization than those in all other percentile groupings.

With regard to age, those who began active duty at age 21–25 and those who began at age 26–30 had a significantly higher risk of hospitalization than those beginning at age 17–20.

**TABLE 2.65. HOSPITALIZATIONS WITHIN 1 YEAR OF ACCESSION FOR ENLISTED PERSONNEL ACCESSED IN 1998–2003: SERVICE**

Service	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
Army	365,857	19,256	16,716	4.57	1.00	
Navy	255,314	8,269	7,410	2.90	0.64	0.62, 0.65
Marines	182,166	7,005	6,205	3.41	0.75	0.72, 0.77
Air Force	193,829	8,178	7,237	3.73	0.82	0.80, 0.84

**TABLE 2.66. HOSPITALIZATIONS WITHIN 1 YEAR OF ACCESSION  
FOR ENLISTED PERSONNEL ACCESSED IN 1998–2003: GENDER**

Gender	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
Male	817,747	32,112	28,284	3.46	1.00	
Female	179,415	10,596	9,284	5.17	1.50	1.46, 1.53

**TABLE 2.67. HOSPITAL ADMISSIONS WITHIN 1 YEAR OF ACCESSION  
FOR ENLISTED PERSONNEL ACCESSED IN 1998–2003: AGE**

Age	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
17–20 yr	736,853	30,238	26,774	3.63	1.00	
21–25 yr	211,132	9,690	8,440	4.00	1.10	1.07, 1.13
26–30 yr	39,318	2,148	1,823	4.64	1.28	1.22, 1.34
>30 yr	9,848	632	531	5.39	1.48	1.36, 1.61

**TABLE 2.68. HOSPITALIZATIONS WITHIN 1 YEAR OF ACCESSION  
FOR ENLISTED PERSONNEL ACCESSED IN 1998–2003: RACE**

Race	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
White	708,751	30,929	27,172	3.83	1.00	
Black	182,344	7,863	6,917	3.79	0.99	0.96, 1.02
Other	103,151	3,860	3,429	3.32	0.87	0.84, 0.90

**TABLE 2.69. HOSPITALIZATIONS WITHIN 1 YEAR OF ACCESSION  
FOR ENLISTED PERSONNEL ACCESSED IN 1998–2003: EDUCATION LEVEL**

Education level	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
Below HS	97,718	4,056	3,562	3.65	1.00	
HS diploma	850,779	36,494	32,103	3.77	1.04	1.00, 1.07
Some college	26,553	1,294	1,123	4.23	1.16	1.09, 1.24
Bachelor's and above	20,582	801	725	3.52	0.97	0.89, 1.04

**TABLE 2.70. HOSPITALIZATIONS WITHIN 1 YEAR OF ACCESSION  
FOR ENLISTED PERSONNEL ACCESSED IN 1998–2003: AFQT SCORE**

AFQT score	Enlisted accessions	Hospital admissions	Persons hospitalized			
			Count	%	Relative risk	95% CI
93–99	44,441	1,642	1,450	3.26	1.00	
65–92	344,152	14,201	12,553	3.65	1.12	1.06, 1.18
50–64	275,701	12,444	10,921	3.96	1.21	1.15, 1.28
30–49	307,911	13,445	11,795	3.83	1.17	1.11, 1.24
1–29	21,592	937	814	3.77	1.16	1.06, 1.26

Table 2.71 shows the most common medical categories of reasons for hospitalizations and the numbers of admissions and individuals admitted for those conditions. Medical categories were as specified in ICD9. The category neurotic and personality disorders is clearly the most frequent, particularly for hospitalizations during the first year of service. Not surprisingly, injuries is the next most common, reflecting the physically demanding nature of early enlisted service.

When the follow-up is through the first 2 years of service, the relative sizes of the medical categories change somewhat. For example, the numbers of injury hospitalizations (and persons hospitalized) is nearly double that seen after 1 year of follow-up, whereas the numbers for pneumonia and influenza are almost the same after 2 years as after 1 year of follow-up. Presumably, enlistees are at a similar level of risk for serious injuries over the first 2 years of service, but the risk of pneumonia and influenza decreases after early service, perhaps as the enlistees are less often in barracks or other group-living situations.

The numbers of hospitalizations for neurotic and personality disorders increases with the 2-year follow-up but is less than double that after 1 year of accession. AMSARA has found that those enlistees experiencing a serious episode related to mental illness early in training are discharged soon after (2000 AMSARA Annual Report, p. 23–33). A large portion of such mental problems appear to manifest during the first year of service.



**TABLE 2.71. HOSPITALIZATIONS AND PERSONS HOSPITALIZED WITHIN 1 AND 2 YEARS OF SERVICE BY MEDICAL CATEGORY FOR ENLISTED PERSONNEL ACCESSED IN 1998–2003**

Medical category	Within 1 year of accession		Within 2 years of accession	
	Hospital admissions	Persons hospitalized	Hospital admissions	Persons hospitalized
Neurotic and personality disorders	11,042	9,555	15,322	12,781
Injuries	3,730	3,417	7,570	6,580
Pneumonia and influenza	2,992	2,845	3,159	2,985
Other psychoses	2,490	2,010	3,850	2,762
Infections of skin	2,038	1,896	2,693	2,463
General symptoms	1,898	1,616	2,939	2,400
Other diseases due to virus	1,887	1,795	2,077	1,955
Acute respiratory infections	1,283	1,207	1,492	1,393
Complications of pregnancy	1,097	947	12,480	10,581
Alcohol and drug dependency	888	725	1,824	1,460
Appendicitis	878	849	1,598	1,512
Poisoning and toxic effects	674	591	1,130	960
Other diseases of respiratory system	631	581	1,047	933
Hernia of abdominal cavity	553	530	793	750
Other diseases of urinary system	536	468	943	785
Noninfectious enteritis	498	430	783	643
Disease of oral cavity	487	462	1,059	977
Arthropathies and related disorders	431	370	1,407	1,190
Chronic obstructive pulmonary disease and allied conditions	333	292	442	382
Other bacterial diseases	316	293	370	338
Viral diseases accompanied by exanthema	257	246	303	285
Others	7,665	6,361	12,724	10,052
<b>Total</b>	<b>42,604</b>	<b>37,486</b>	<b>76,005</b>	<b>64,167</b>

### 3. FUTURE STUDIES

#### **Research to Develop a Screening Test for Detection of Psychiatric Disorders in Young Adults**

Psychiatric disorders, a leading cause of EPTS discharges, are common in young adults within the age range of most military applicants (age 17–25 years). From 1997 to 2002, approximately 30% of all EPTS discharges were due to psychiatric conditions, most of which were concealed at accession. Recruitment and accession expenses associated with these losses cost the military an estimated \$27.3 million in 1998 alone; this estimate excludes the costs of medical care, subsequent disability discharges, and associated attrition. Research has shown that recruits being discharged often had a history of depression and suicidal ideation and had concealed their mental health history during their medical accession examination [1]. Another study found that mental illness in servicemembers is a leading cause of health care utilization and is associated with a relatively high risk of subsequent attrition compared with other diagnostic categories [2].

Unfortunately, no reliable screening tool for identifying individuals at risk for a mental health problem exists. Various screening programs implemented in military recruitment and basic training settings have yielded inconsistent results [3–6]. The Small Business Innovative Research project aims to develop a rapid, inexpensive, and reliable method of screening recruits for major psychiatric disorders and other behavioral factors that strongly predict occupational dysfunction in the military. To reduce attrition, the screen ideally will identify individuals with psychiatric disorders who should not enter active duty and detect conditions that can be addressed with appropriate intervention before entry (e.g., mental health counseling, cognitive group therapy, and life skills training). The overall goal is to reduce attrition related to psychiatric disorders by 10% or greater. This methodology also may aid in assessing disease severity and response to therapy.

Phase I of the project was awarded in 2002 to two contractors. The goal of the 6-month phase was the development a prototype of an appropriate screening tool designed to be standardized and interpretable by physicians without specialty training in psychiatry. Possible tools included questionnaires, biochemical markers, and detection of psychoactive pharmaceuticals to identify those who recently discontinued psychiatric medications.

For phase II, each screening methodology will be evaluated in a population of young adults to determine sensitivity, specificity, positive predictive value for any disqualifying psychiatric disorder, and ease of use. These validation trials will be conducted at selected MEPS under the approval of the Army Surgeon General's Human Subjects Research Review Board at the Army Medical Research and Materiel Command. Beginning in 2003, a 2-year award was made to the same two contractors who will conduct the validation trials. Phase III, currently planned but not yet funded, will include large-scale efficacy trials.

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# **Assessment of Recruit Motivation and Strength (ARMS)**

## ***Background***

In these times during which the military needs personnel to serve, one important and sensible strategy is to remove unnecessary barriers for those who already wish to join. Each year, the U.S. Army medically delays or disqualifies over 20% of its applicants, resulting in the eventual loss of thousands who want to serve. Although some of these actions are in the best interests of the individual's health and safety, a sizable number might be simply unnecessary.

The military's accession medical standards have historically been designed and implemented as a means to screen out applicants who might not be able to meet the physical demands of service. Some of these standards (e.g., those for body weight and composition) are used as surrogate measures of the individual's physical fitness. However, whether these measures accurately indicate an individual's fitness for service is unclear.

Other standards (e.g., those for history of orthopedic conditions) depend in large measure on forthrightness of the applicant. However, numerous studies have demonstrated that over 70% of discharges for a preexisting medical condition occur among individuals who did not disclose their condition at the time of application.

In short, the current Army accession medical screening process delays or denies entry to thousands of individuals who could successfully serve yet fails to detect some of the most common and problematic preexisting medical conditions. The purpose of the assessment of recruit motivation and strength (ARMS) study is to determine whether a simple, direct assessment of physical fitness and motivation could be used to identify viable applicants who would otherwise be delayed or denied under the current standards. This change from a "screening out" mentality to a "screening in" approach could add hundreds, if not thousands, of qualified new enlistees to the Army each year.

## ***ARMS Test***

The following three components comprise the ARMS test:

1. Aerobic capacity is assessed by a step test in which the recruit steps up to and down from a platform at a constant pace for 5 minutes. After a 1-minute rest, pulse is recorded.
2. Upper body muscular endurance is assessed through the number of pushups completed in 1 minute.
3. Upper body muscular strength is assessed through an incremental dynamic lift that uses a one-repetition maximum lifting procedure.

## ***ARMS Study***

The ARMS study proposes that three simple physical performance tests be used to identify physically viable recruits and to encourage physical training before shipping. The study protocol called for the following three phases:

Phase I (1 month, completed April 2004):

- Establishment of performance testing and data collection procedures.

Phase II (enrollment May 2004–February 2005; follow-up data collection ongoing):

- Performance testing of all active duty Army applicants at time of physical examination and at time of shipping;
- Statistical tracking and comparison of early attrition among accessed subjects;
- Establishment of ARMS test passing criteria, i.e., levels of test performance associated with improved likelihood of retention on active duty.

Phase III (enrollment February 2005–December 2005, with one additional year of follow-up data collection):

- Continued performance testing of applicants at physical examination and at time of shipping;
- Granting of immediate waiver to those who exceed established body fat standards but pass ARMS test;
- Statistical tracking and comparison of injury and discharge events among accessed subjects.

### **Preliminary Results**

Table 3.1 lists the criteria currently being used for passing the ARMS test and the percentages of tested shippers who passed each component during phase II. The current passing criteria were established as the levels indicating an acceptable degree of fitness while having reasonable pass percentages. The step test presents the most difficulty, with slightly over 80% of males passing and slightly less than 70% of females passing.

**TABLE 3.1. CURRENT PASSING CRITERIA AND PASS PERCENTAGES AMONG SHIPPERS FOR ARMS TEST COMPONENTS BASED ON PHASE II DATA**

Component	Passing criteria	Pass percentages	
		Females	Males
Step test	Complete 5-minute test at proper pace with posttest pulse of $\leq 180$ beats per minute	69.0	81.7
Pushups	Females: 4 pushups within 60 seconds Males: 15 pushups within 60 seconds	95.4	97.4
Dynamic lift	Females: at least 40 pounds Males: at least 50 pounds	99.0	97.2

Table 3.2 shows the relative risk of attrition early in service among those who failed the ARMS tests versus those who passed. Although the follow-up time for phase II subjects has been insufficient for detailed analysis, the available data clearly indicate that the ARMS test predicts early attrition. Individuals who did not satisfactorily complete the ARMS test were much more likely to attrite early than those who performed satisfactorily. For example, females who could not pass the step test but were accessed onto active duty had 1.81 times the attrition risk of females who successfully completed the step test. Similar results were seen for males, and the results were similar when all three ARMS components were considered. As additional data become available, more precise modeling can be applied to adjust for varying follow-up times and other factors.



**TABLE 3.2. RELATIVE RISK OF EARLY DISCHARGE FROM ARMY:  
THOSE FAILING VS THOSE PASSING ARMS TEST**

Component (1,129 total females, 5,116 total males)		Relative risk
Female	Step test only	1.81
	All three tests	1.77
Male	Step test only	1.74
	All three tests	1.77

The ARMS test has also detected several orthopedic and other conditions among subjects as they strive to perform the components. For example, among the 6,464 phase II shipping subjects, 440 (6.8%) were found to have physical difficulty while performing the step test. Among these were 126 who showed signs of extreme fatigue and 51 who had signs of joint or muscle pain. Among those experiencing muscle or joint pain, only 20 (39.2%) had an orthopedic condition noted or disclosed during their MEPCOM physical exam. Although subject numbers and follow-up time are insufficient for formal analysis, early evidence suggests that the subjects experiencing physical problems during ARMS testing are at high risk for early attrition.

### ***Future of ARMS***

The ARMS paradigm removes barriers to enlistment for those physically able to serve. At the same time, it helps to identify potentially serious physical problems seldom disclosed voluntarily by applicants.

During Phase III, applicants who fail to meet Army body fat standards will be allowed to gain a waiver by passing the ARMS test. In approximately the first 2 months, more than 100 individuals were allowed to access with a waiver granted for body fat through ARMS testing. It is expected that roughly 500 accessions with ARMS waivers will be seen in the course of the 1-year subject enrollment. AMSARA will continue to statistically track all subjects for health and attrition outcomes.

The “screening in” approach that underlies the ARMS study could reasonably be applied to many of the accession medical standards that are designed as surrogate measures of physical readiness. For example, history of orthopedic conditions delays or denies service to many applicants. Results of an ongoing study of injury likelihood among ARMS study subjects will help determine whether individuals with a history of orthopedic conditions should be allowed to serve after demonstrating physical fitness.



## 4. DATA SOURCES

AMSARA requests and receives data from various sources, most of which are the primary collection agencies for the data they provide to AMSARA. Because data are seldom collected with the goal of epidemiologic study, AMSARA coordinates with the appropriate points of contact to ensure that the following major data types needed for AMSARA studies are in an appropriate form for epidemiologic work.

As mentioned under “Charter and Supporting Documents,” AMSARA maintains strict confidentiality of all data it receives. No external access to the data is allowed, and internal access is limited to a small number of primary analysts on an as-necessary basis. Research results are provided only at the aggregate level, with no possibility of individual identification.

### MEPS

AMSARA receives data on all applicants who undergo an accession medical examination at any of the 65 MEPS. These data, provided by MEPCOM, contain several hundred demographic, medical, and administrative elements on recruit applicants for each applicable branch (regular enlisted, reserve, National Guard) of each service (Air Force, Army, Coast Guard, Marines, and Navy). These data also include records on a relatively small number of officer recruit applicants and other nonapplicants receiving periodic physical examinations.

From the data records provided by MEPCOM, AMSARA extracts personal, medical, and administrative variables that are often of use in studies of military attrition. These include personal identifiers (e.g., name and SSN) for linking with other data, demographics (e.g., gender, age, and race), and a wide range of other information that is often relevant to military attrition studies (e.g., intended service, education level at the time of application, and AFQT scores).

In addition, the MEPS records provide extensive medical examination information, including date of examination, medical qualification status, medical failure (“disqualification”) codes (where relevant), and any waiver requirements. Results of some specific tests are also extracted, including those of hearing/vision and alcohol/drug tests, and height, weight, and blood pressure measurements.

A medical disqualification is categorized as either “temporary” (condition that can be remediated, e.g., being overweight) or “permanent” (condition that remains with the applicant, e.g., history of asthma). For those applicants with a permanent disqualification, an accession medical waiver from a service-specific waiver authority is required for the applicant to be eligible for accession into the service (see “Waiver”).

MEPS data are the primary source of demographic information on new accessions into the armed forces and of initial medical conditions and medical qualification status. These data are linked by AMSARA to DMDC gain files (see “Active Duty Enlistee Gain/Loss”) to verify new accessions into the military and to provide benchmark descriptive statistics. These

linked data are also used in epidemiologic investigations related to the military's medical accession standards, such as selecting and matching subjects for survival studies to compare retention patterns among new recruits with various medical histories.

## **Active Duty Enlistee Gain and Loss Files**

The DMDC provides data on individuals entering military service (gain or accession) and on individuals exiting military service (loss). Gain/loss data, which are AMSARA's primary sources of information about who is, or has been, in the military, include when an individual began duty and when or if an individual exited the military. From this information the length of service can be determined for any individual entering and leaving during the periods studied. This information is vital to survival analyses and attrition studies such as those presented in Section 1.

Gain data include approximately 50 variables. Of these, AMSARA has identified 25 of primary interest: personal identifiers (e.g., name and SSN) for linking with other data, demographics (e.g., age, education, and AFQT score) at the time of accession, and service information (e.g., date of entry and basic training site). These data are combined with MEPS data to determine accession percentages among applicants by demographic and other variables. Also, as mentioned under "MEPS," these linked data are used in epidemiologic investigations related to the military's medical accession standards.

Loss data also include approximately 50 variables, many of which are the same as those found in the gain file, although they reflect the individual's status at the time of loss rather than at the time of gain. The variables of primary interest to AMSARA are personal identifiers for linking with other data, the loss date for computing length of service, and the interservice separation code as a secondary source of the reason for leaving the military. These data serve as the primary source of information on all-cause attrition from the service and are linked with the MEPS and gain data for studies of attrition.

A problem with the loss data lies in the broad nature of the interservice separation code that characterizes the cause of the loss. Although each service maintains its own codes for describing discharge reasons, these are replaced at DMDC by a consolidated interservice separation code to provide a common coding system for all military discharges. Many categories have overlapping definitions, making it difficult to determine the real reason for discharge. For example, a discharge for EPTS pregnancy might be coded "pregnancy," "condition existing prior to service," or "fraudulent enlistment." This lack of specificity, as well as interservice differences in discharge categorizations, has been encountered in comparing other sources of loss information (i.e., EPTS and disability discharge data) with the DMDC loss data. Moreover, a study of Army discharges at one basic training site indicates that the reasons underlying many discharges are more complex than can be fully characterized by any single loss code (see Fort Leonard Wood study in Section 1).

## **Waiver**

AMSARA receives records on all recruits who were considered for an accession medical waiver, i.e., those who received a permanent medical disqualification at the MEPS (see "MEPS") and sought a waiver for that disqualification. Each service is responsible for



making waiver decisions about its applicants. Data on these waiver considerations are generated and provided to AMSARA by each service waiver authority. Although the specifics of these data vary by service, they generally contain identifiers (e.g., name and SSN) for linking with other data, demographics (e.g., gender, age, and race), and information about the waiver consideration.

In particular, each record contains the date of the waiver consideration, indicators of the medical condition(s) for which the waiver was required, and the decision of the waiver authority. The Air Force and Army code waiver conditions according to the full ICD9 coding scheme, whereas the Navy and Marines code waiver conditions according to the subset of ICD9 codes presented in DoD Instruction 6130.4 in association with medically disqualifying conditions.

Many AMSARA studies begin with the waiver data. Individuals granted a waiver for a particular medically disqualifying condition are matched to the DMDC gain file to determine their date of entry, if any, into the service. Those found to have begun active duty within a specified time constitute the pool from which the main study subjects, and often their comparison subjects, are drawn. Follow-up medical and attrition information during military service is appended to these records, and statistical comparisons can then be made. Specific details vary from study to study. A few additional details of the data provided by each service's waiver authority follow.

### ***Air Force***

The Air Force Directorate of Medical Services and Training transmits, upon request, data on all officer and enlisted accession medical waivers. These data include SSN, name, demographics, action (e.g., approved, disapproved, other), and date of waiver consideration. In addition, ICD9 codes are used to define the medically disqualifying condition(s) for which the waiver is being considered.

### ***Army***

The Army Recruiting Command (Fort Knox, KY) has provided monthly electronic accession medical waiver data since January 1997. Each data record contains name, SSN, action (e.g., approved, disapproved, other), and date of waiver consideration. In addition, ICD9 codes are used to define the medically disqualifying condition(s) for which the waiver is being considered.

### ***Marines***

The Navy Bureau of Medicine and Surgery (BUMED) provides, on request, accession and commissioning medical waiver data for enlisted personnel and officers, along with data from special programs such as ROTC and the Naval Academy. Data include name, SSN, demographics, date of waiver consideration, and recommended action (e.g., approved, disapproved, other). In addition, the subset of ICD9 diagnosis codes listed in DoD Instruction 6130.4 is used to indicate the medically disqualifying condition(s) for which the waiver is being considered.



## **Navy**

The office of Commander, Navy Recruiting Command (CNRC), provides accession medical waiver data on applicants for enlisted service in the Navy that occurred from May 2000 to December 2003. Before May 2000, enlisted medical accession waivers for the Navy were considered by BUMED, which then provided data to AMSARA. Unfortunately, only hard copy data were available from CNRC for CY 2004, and these data were received too late to allow data entry and inclusion in this report. AMSARA staff will attempt to resolve this issue for future data collection.

## **Hospitalization**

The Patient Administration Systems and Biostatistics Activity of the Army Medical Department has provided hospitalization data on a yearly basis for all services except the Coast Guard. These data contain information on admissions of active duty officers and enlisted personnel to any military hospital. Information on each visit includes SSN for linking with other data, demographics (e.g., gender, age, and race), and details about the hospitalization. In particular, the medical nature of the hospitalization is coded according to the ICD9, with up to eight codes per record to describe all conditions found. Date of admission, date of disposition, number of sick days, number of bed days, and indicators of the medical outcome are also included.

## **EPTS Discharges**

Discharges for EPTS medical conditions are of vital interest to AMSARA. A discharge for a medical condition can be classified as an EPTS discharge if the condition was verified to have existed **before the recruit** began service and if the complications leading to discharge arose no more than 180 days after the recruit began duty. MEPCOM requests a copy of official paperwork on all EPTS discharges and records certain information about each. This information includes a rough medical categorization (20 categories) of the reason(s) for discharge and a judgment on each discharge regarding why (i.e., concealment, waiver, or unawareness) the person was not rejected for service on the basis of the preexisting condition. Beginning in August 1996, this paperwork has been regularly forwarded by MEPCOM to AMSARA for additional data extraction, including more specific coding of medical conditions leading to discharge.

The primary concern with the EPTS discharge data is completeness. Table 4.1 summarizes the numbers of records provided to AMSARA over CYs 1998–2003. Note that the numbers of records have been unstable over time for nearly all basic training sites. For example, the numbers of EPTS records provided by the Marine Corps Training Depot in San Diego dropped considerably in CY 2000 from those that had previously been provided, and the numbers have remained surprisingly low since then. Although some variability in numbers of EPTS records over time is expected, underreporting is clearly a major source of the fluctuations.

AMSARA has addressed many of these data inconsistencies with on-site officials and continues to emphasize the importance of these data to assessing and improving the fitness of future recruits.

**TABLE 4.1. EPTS DISCHARGE DATA REPORTED TO MEPCOM BY TRAINING SITE AND YEAR\***

Site	1998	1999	2000	2001	2002	2003	Total
<b>Air Force</b>							
Lackland AFB	1,069	994	107	227	784	740	3,921
<b>Army</b>							
Fort Jackson	1,766	712	356	675	822	1,046	5,377
Fort Leonard Wood	1,453	1,243	1,578	1,487	864	664	7,289
Fort Benning	534	888	1,212	1,128	1,369	1,179	6,310
Fort Sill	463	713	795	148	314	673	3,106
Fort Knox	652	506	598	650	582	523	3,511
<b>Marines</b>							
Parris Island	1,054	812	551	751	1,080	910	5,158
San Diego	491	527	656	193	116	90	2,073
<b>Navy</b>							
Great Lakes	5,339	2,685	1,919	1,861	1,874	1,077	14,755
<b>Total</b>	12,821	9,080	7,772	7,120	7,805	6,902	51,500

\* Numbers may not sum to totals shown in Section 2 because information from specific training sites is incomplete and other requirements for records are different.

In light of these shortcomings in the data, comparisons of EPTS discharges across services, or even across different training sites within the same service, should be interpreted with caution. Disparities may reflect differences in reporting procedures more than actual differences in discharge likelihood. Furthermore, counts of EPTS records should not be construed as representing all EPTS discharges. Instead, EPTS counts only represent discharges for which data were reported.

## Disability

Data on disability discharge considerations are compiled separately for each service at its disability agency. The Army agency has provided data on all disability discharge considerations during 1995–2002 and continues to provide these data. The Air Force has had data extraction difficulties in the recent past but has now provided data covering the affected period (CY 2002–2003). The Navy/Marines agency has provided data only on a diagnosis-specific request basis rather than for all actions. Therefore, only Army and Air Force disability discharge data were summarized in Section 2.

The Army physical disability agency provides information on all disability cases considered, including personal identifiers (e.g., name and SSN), program (e.g., regular enlisted, academy, and officer), date of consideration, and disposition (e.g., permanent disability, temporary disability, or return to duty as fit). For individuals receiving a disability discharge, medical condition codes and degree of disability are also included.

The Air Force Physical Disability Division provides data on all disability cases it considers, including much of the same information as outlined for the Army. Specifically, these data include personal identifiers (e.g., name and SSN), rank, date of consideration, and disposition (e.g., permanent disability, temporary disability, or return to duty as fit). For individuals re-

ceiving a disability discharge, medical condition codes and degree of disability are also included.

For both the Army and Air Force data, the medical condition(s) involved in each case are described using the condition codes of the Veterans Administration Schedule for Rating Disabilities. This set is less comprehensive than the ICD9 codes. In some cases the disabling condition does not have an associated code, so the code most closely resembling the true condition is used. AMSARA therefore only uses broad categories of disability condition codes rather than attempting to interpret specific codes.



## CHARTER AND SUPPORTING DOCUMENTS



HEALTH AFFAIRS

THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D. C. 20301-1200

DEC 08 1995

### MEMORANDUM FOR SURGEON GENERAL OF THE ARMY

SUBJECT: Military Medical Standards Analysis and Evaluation Data Set

The personnel community has asked OASD/HA to develop a fact based accessions policy to minimize medical attrition, quantitate risk in medical waivers, and to defend accession decisions when challenged.

The offices of Clinical Services and Military Personnel Policy have worked closely with epidemiologists at Walter Reed Army Institute of Research on the concept of a Military Medical Standard Analysis and Evaluation Data Set (MMSABDS) to apply quantitative analysis to a longitudinal data base.

The Army Center for Health Promotion and Preventive Medicine (CHPPM) maintains a data base of personnel, hospitalization, deployment and separation information for all Services. I would like WRAIR, in coordination with CHPPM, to serve as consultants to the Accession Medical Standard Steering Committee, modify and maintain the data base, and coordinate field research to answer specific questions germane to accession policy.

Therefore, I request that, by the end of December 1995, a proposal be submitted through you from WRAIR, outlining the consultant role and modifications needed to the data base. This should include funding requirements.

*Edward D. Martin /br*  
Stephen C. Joseph, M.D., M.P.H.

cc:  
Commander WRAIR

HA Control #: NONE  
Due Date: NONE

February 28, 1995

ASSISTANT SECRETARY OF DEFENSE  
(HEALTH AFFAIRS)  
EXECUTIVE SUMMARY/COVER BRIEF

MEMORANDUM FOR THE ASSISTANT SECRETARY OF DEFENSE  
(HEALTH AFFAIRS)

THROUGH: *Jm* Dr. Sue Bailey, DASD (CS)  
FROM: Action Officer, Colonel Ed Miller  
SUBJECT: Accession Medical Standards Analysis and Research  
Activity (AMSARA)  
PURPOSE: SIGNATURE--on request that the Assistant Surgeon  
General of the Army (Research and Development)  
establish an Accession Medical Standards Analysis  
and Research Activity (AMSARA).

DISCUSSION:

The Accessions Medical Standards Working Group which met over the summer sponsored through MFIM funding completed a functional economic analysis of the medical accessions examination process. One of the critical recommendations made by the Group was to establish a research activity to provide the Medical Accessions Standards Council (also recommended) with an evidence-based analysis of DoD accessions medical standards. The memorandum tasks the Army with the responsibility of establishing the activity resourced under the Defense Health Program. This has already been staffed with the Assistant Surgeon General of the Army (Research and Development)

RECOMMENDATION:  
Sign tasking memorandum to Army Surgeon General.

COORDINATION:

✓ Mr. Conte, PDUSD(P&R) \_\_\_\_\_  
✓ Mr. Maddy, HB&P: See attached memo  
✓ Mr. Richards, EO: \_\_\_\_\_  
Dr. Martin, PDASD: \_\_\_\_\_

**DEPARTMENT OF DEFENSE**  
**ACCESSION MEDICAL STANDARDS**  
**STEERING COMMITTEE**

**CHARTER**

**I. ESTABLISHMENT, PURPOSE AND SCOPE**

**A. ESTABLISHMENT**

The Under Secretary of Defense (Personnel and Readiness) establishes a Department of Defense Accession Medical Standards Steering Committee (hereafter referred to as the "Committee".) The Committee shall operate under the joint guidance of the Assistant Secretaries of Defense (Force Management Policy and Health Affairs [FMP & HA].)

**B. PURPOSE**

The Committee's main objective is to ensure the appropriate use of military members with regard to medical/physical characteristics, assuring a cost-efficient force of healthy members in military service capable of completing initial training and maintaining worldwide deployability. The primary purposes of the Committee are: (1) integrating the medical and personnel communities in providing policy guidance and establishing standards for accession medical/physical requirements, and (2) establishing accession medical standards and policy based on evidence-based information provided by analysis and research.

**C. SCOPE OF ACTIVITY**

**1. The Committee's responsibility involves:**

- a. Providing policy oversight and guidance to the accession medical/physical standards setting process.
- b. Directing research and studies necessary to produce evidenced-based accession standards making the best use of resources.
- c. Ensuring medical and personnel coordination when formulating accession policy changes.
- d. Overseeing the common application of the accession medical standards as outlined in DoD Directive 6130.3, "Physical Standards for Appointment, Enlistment, and Induction."



- e. Interfacing with other relevant Department of Defense and Department of Transportation organizations.
- f. Recommending promulgation of new DoD directives as well as revisions to existing directives.
- g. Recommending legislative proposals concerning accession medical/physical processing.
- h. Reviewing, analyzing, formulating and implementing policy concerning the accession physical examination.
- i. Issuing policy letters or memoranda providing interpretation of provisions of DoD directives.
- j. Resolving conflicts of application of accession medical/physical standards and policies among the Military Services and other authorized agents.
- k. Maintaining records and minutes of Committee meetings.

## **II. ORGANIZATION**

A. The Committee will be co-chaired by the Deputy Assistant Secretary of Defense (Military Personnel Policy) and the Deputy Assistant Secretary of Defense (Clinical Services). This will facilitate tasking the Deputy Chiefs of Staff for Personnel and the Surgeons General to assign staffers to relevant working groups, and to ensure DCS/Personnel and Surgeon General personal involvement with the various issues. The Committee will convene semiannually, at a minimum, and at the discretion of the Chairpersons.

B. Committee members are appointed by the Under Secretary of Defense (Personnel and Readiness) and provide ongoing liaison with their respective organizations concerning matters of medical/physical accession policy.

C. The Committee shall be composed of representatives from the following:

Office of the Assistant Secretary of Defense (Force Management Policy)

Office of the Assistant Secretary of Defense (Health Affairs)

Office of the Assistant Secretary of Defense (Reserve Affairs)

Office of Service Surgeons General

Office of Service Deputy Chiefs of Staff for Personnel, and Chief of Personnel and Training, HQ U.S. Coast Guard.

D. Representatives from the Office of the Assistant Secretary of Defense (Force Management Policy) and the Office of the Assistant Secretary of Defense (Health Affairs) shall serve as executive secretaries for the Committee, and maintain a working group, composed of representatives from each of the offices mentioned above, to receive and review issues pertinent to accession policy.

E. The Commander, U.S. Military Entrance Processing Command, and the Director, DoD Medical Examination Review Board shall serve as advisors to the Committee.

F. The Committee may invite consultants (i.e., training, recruiting, epidemiology) at the discretion of the Chairpersons.

Approved: JAN 16 1996  
Date

A handwritten signature in black ink, appearing to read 'EDWIN DORN', with a large, stylized loop at the end.

EDWIN DORN

## Acronyms

ADHD	attention deficit and hyperactivity disorder	GED	general educational development
AFB	Air Force base	HS	high school
AFQT	armed forces qualifying test	ICD9	<i>International Classification of Diseases, 9<sup>th</sup> Revision</i>
AMSARA	Accession Medical Standards Analysis and Research Activity	IET	Initial Entry Training
ARMS	Assessment of Recruit Motivation and Strength	MEPCOM	Military Entrance Processing Command
BUMED	Navy Bureau of Medicine and Surgery	MEPS	Military Entrance Processing Station
CI	confidence interval	MTF	medical treatment facility
CNRC	Commander, Navy Recruiting Command	PFT	pulmonary function test
CY	calendar year	PULHES	physical, upper extremities, lower extremities, hearing and ears, eyes, psychiatric
DMDC	Defense Manpower Data Center	ROTC	Reserve Officer Training Corp
DoD	Department of Defense	SD	standard deviation
EPTS	existed prior to service	SSN	social security number
FEV <sub>1</sub>	forced expiratory volume in 1 second	WRAIR	Walter Reed Army Institute of Research





Accession Medical Standards Analysis & Research Activity

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